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CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

Developing New Strains of High-Tech Workers

Creative Solutions
to the Staffing Crunch

PAGE 46

ALSO INSIDE

Double-Duty CIOs

PAGE 62

Hot Groups

PAGE 72

Bob Borlik cultivated
rural workers at
Northwest Airlines
and now at Supervalu



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CIO

VOL. 13 • NO. 4 • NOVEMBER 1, 1999 • 210 PAGES IN 2 SECTIONS
SECTION 1

Features

34 L.A. Law

PROFILE: ROGER HAM The LAPD's first-ever CIO is armed with the business and technical know-how to make crime fighters more effective, but can IT help the department's public image? *By Tom Field*

46 Get Your Creative (Staffing) Juices Flowing

COVER STORY: HIRING STRATEGIES Tired of always being short on IT workers? Follow the lead of CIOs who are coping with the shortage in imaginative ways. *By Lauren Gibbons Paul*

62 Double Duty

CIO ROLE Some CIOs are taking on responsibilities in departments they've never been in before. *By Howard Baldwin*

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BOOK EXCERPT: HOT GROUPS Two noted business professors propose incinerating the team concept. *By Jean Lipman-Blumen and Harold J. Leavitt*

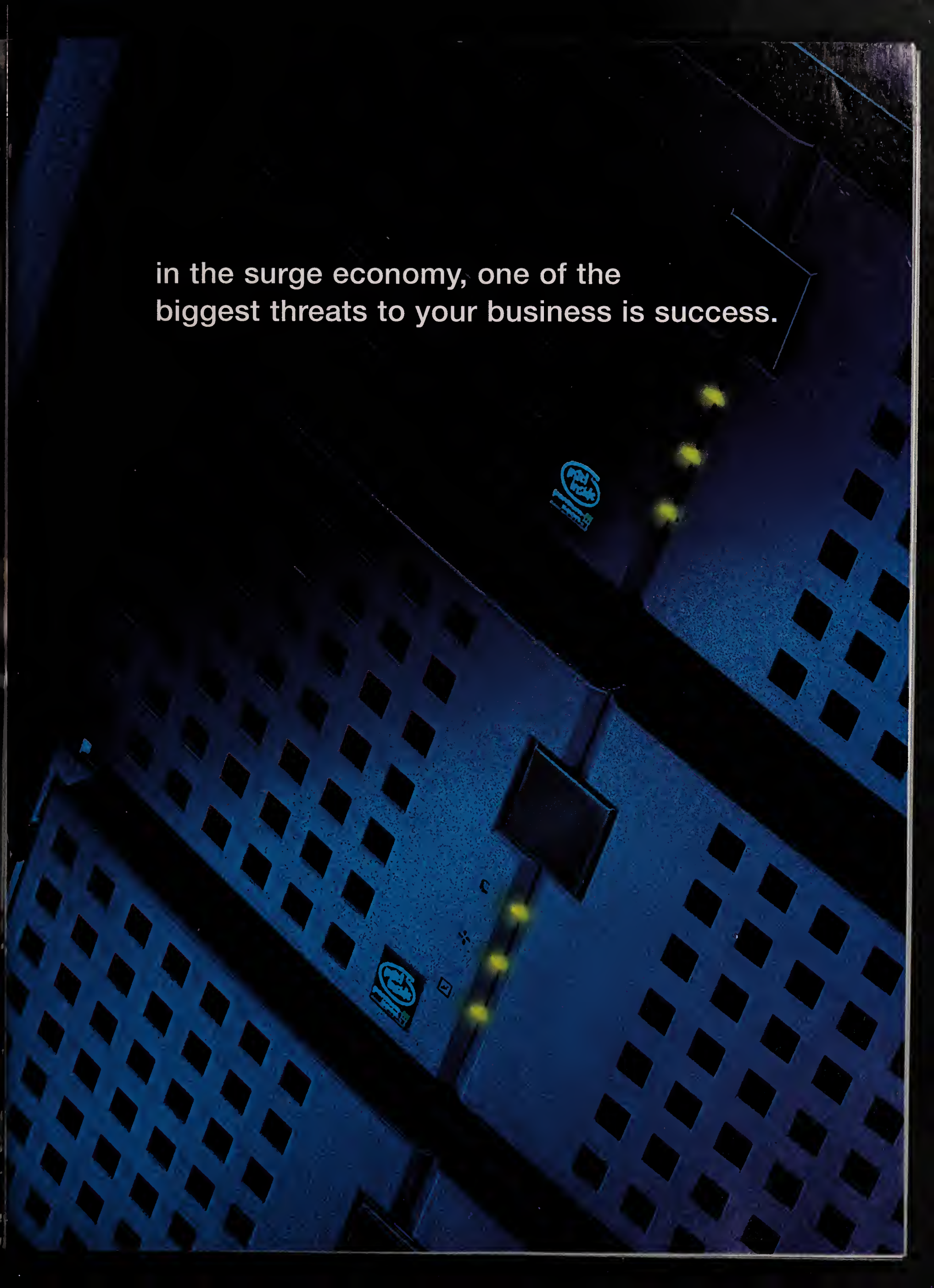
ON THE COVER

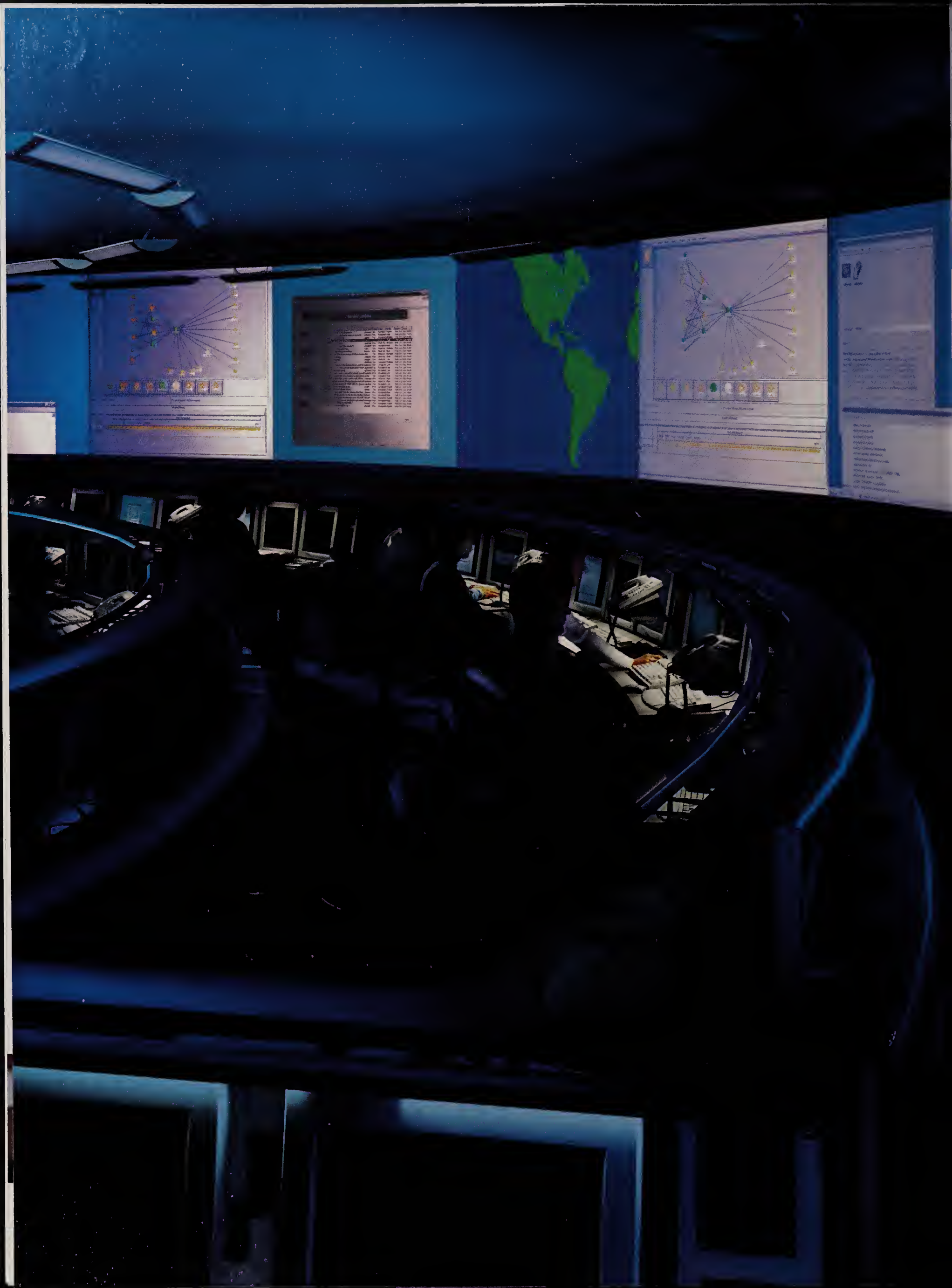
If you want a fully staffed
IT department,
you need to be creative.

Cover photo by Steve Woit



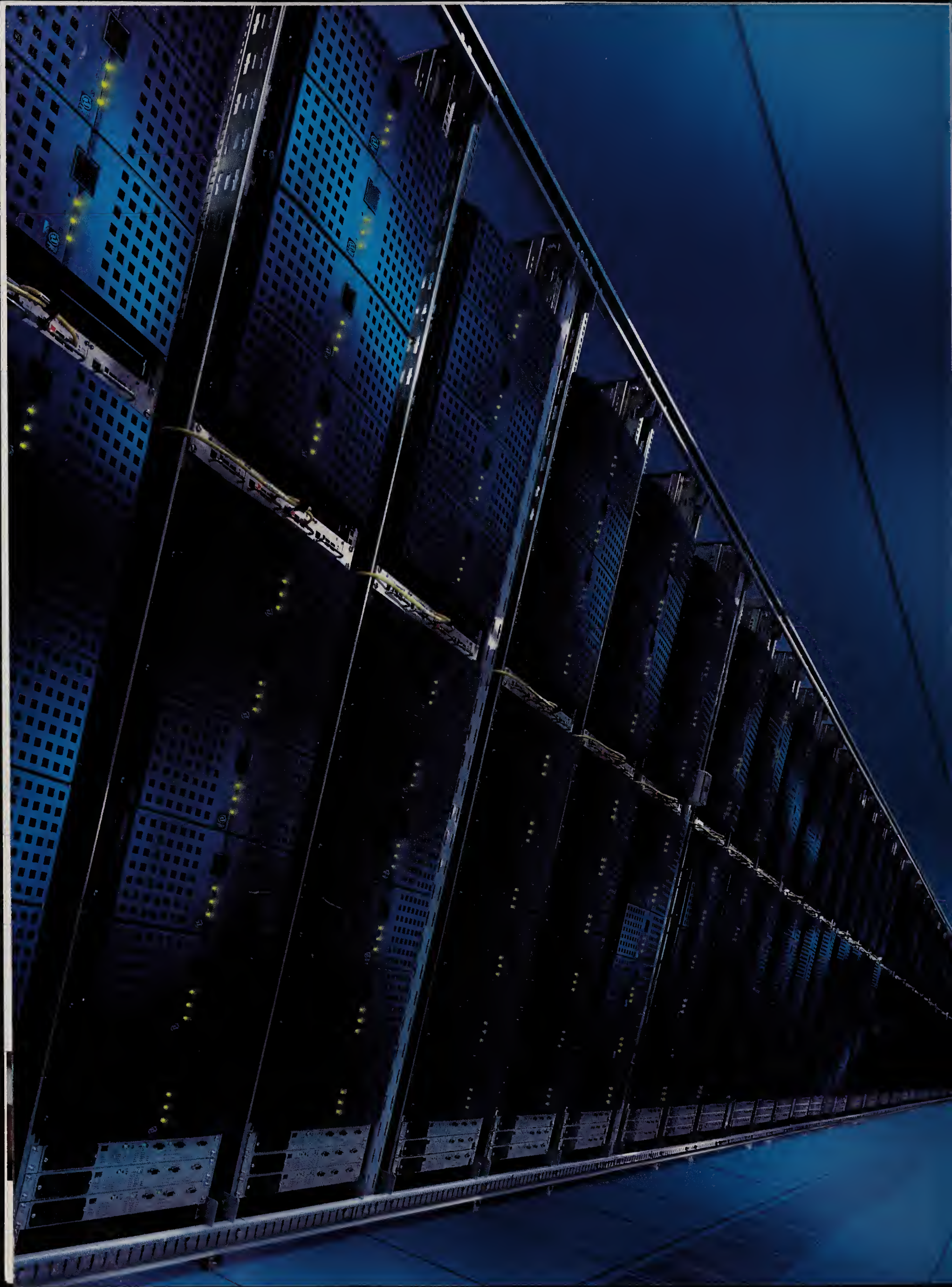
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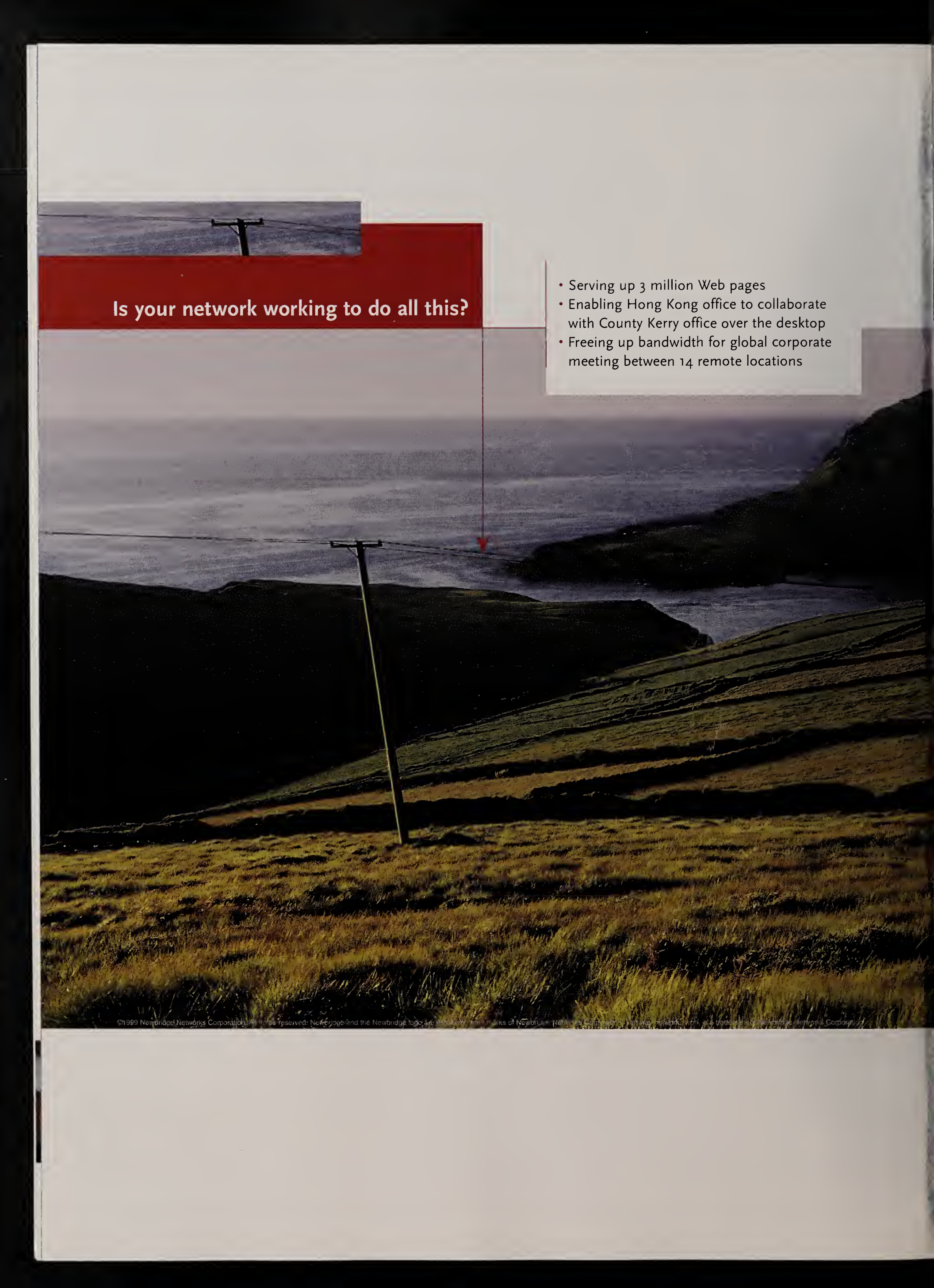
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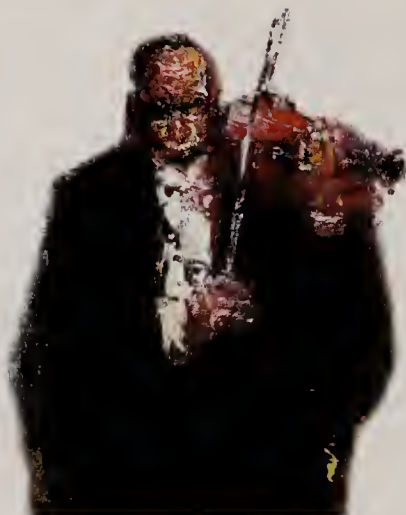
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Columns

30 Knowledge Management, Round Two

THINK TANK The good news is that the knowledge management movement is more than the fad some had predicted. The question now is, Where is it headed?

By Tom Davenport

86 Teamwork Made Simple

EMERGING TECHNOLOGY Project-collaboration software binds together players despite distance and duties.

By Amy Helen Johnson

96 Career Counsel

EXPERT ADVICE CIOs and aspiring IT managers seek guidance from a Korn/Ferry executive recruiter.

By Mark Polansky

104 Alaska Department of Fish and Game's Web Database Access Application

WORKING SMART By formalizing its data collection and retrieval system, the department can update its reports to fisheries in real-time. *By Kathleen S. Carr*



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(Laser) Tennis, Anyone? • A Team Style Guide • Y2K and the Super Bowl • Who Needs Vulcans? • Next Best Options • Fiscal Tendencies

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Inside Section 2

COVER STORY: CUSTOMER CARE

To find out what information really mattered to customers, PHH did something that many companies don't: It asked.

E-STRATEGY Strategists are battling to become the brainpower behind e-business.

WEB-BASED FINANCIAL SERVICES

Progressive financial institutions are banking on the promise of e-commerce.

INTERVIEW Mark Stefik sees the Web making us more connected—and more conflicted.

NETREPRENEURS Claimsnet.com takes the pain—and half the cost—out of filing health-insurance forms.

THE MAIN ATTRACTION Let your site be all things to all people—one person at a time.

GRAY MATTERS CIOs gain another responsibility: keeping records private.

BY DESIGN This utility company takes into account the customer's point of view.

POWER SOURCE Web-based streaming video turns execs into producers.

BACK TALK Building better products.



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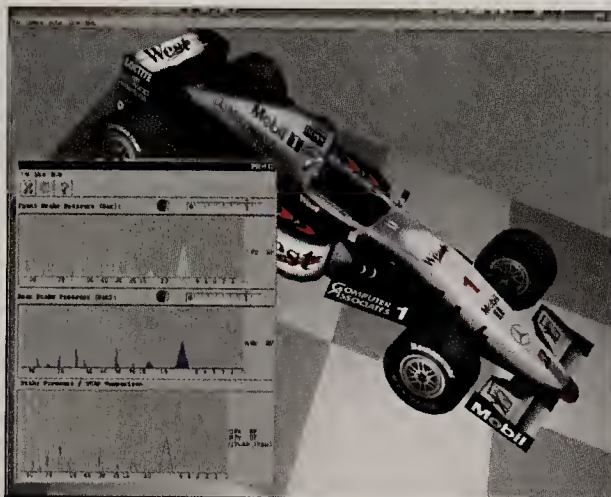
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—A READER GIVING PRACTICAL CAREER ADVICE

“One of the beauties in working in IT is that you are not tied to a particular industry. The experience and the skills are easily transferred.”

—A READER ON SWITCHING INDUSTRIES





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In Box

LETTER FROM THE EDITOR, READER FEEDBACK AND HOW TO REACH US

In past weeks, the Los Angeles Police Department has been immersed in one of the biggest scandal investigations in its history. Members of a special gang unit within the city's Rampart division have been accused of stealing drugs, beating and shooting suspects, planting evidence and lying under oath to convict innocent suspects and cover for fellow officers. As of this writing, a dozen officers had been suspended or fired, with more expected to follow. At the heart of the investigation are hundreds of cases that have been prosecuted with the false testimony of these officers.



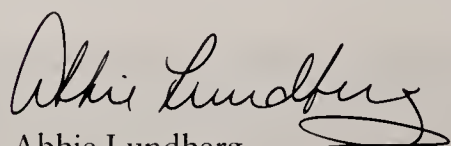
In this issue of *CIO*, we profile Roger Ham, CIO at the LAPD. One of Ham's top projects is to equip L.A. cops with state-of-the-art mobile data terminals so that they can file paperless crime reports from their cruisers. This will cut down on the time spent at the station doing paperwork. "We have 9,600 police officers on the street, and if I can improve their efficiency just 10 percent, then I've effectively put 1,000 additional officers on the streets," says Ham in "L.A. Law," written by Senior Editor Tom Field and beginning on Page 34.

This would help L.A. come closer to one of the top goals of urban police departments today—to spend more time out in the communities they serve, to be viewed by citizens as protectors rather than warriors.

There's another opportunity for Ham to help deal with L.A.'s problems in the future. According to some reports, the false testimony given by the suspended officers followed certain patterns. In cases where unarmed suspects were shot, officers reported that the suspects did certain things in a particular order (clenched their fists, then quickly moved a hand to their waist). While investigators root out the sources of such uncannily consistent testimony, Ham should be deploying technology to mine and analyze crime report data in order to detect these patterns before the cases ever get to court. His new mobile data terminals provide the means to have access to that information within hours of the crime.

Such a system would obviously need good security features. One of the problems with the investigation, says Police Chief Bernard Parks, according to the *Los Angeles Times*, is that evidence that would corroborate key witnesses' allegations has been destroyed. "We may end up with a lot of information we can't prove." A system that captures crime reports and other relevant data—and archives them in an off-limits repository—would make it a lot more difficult for cops to go back and change records after the fact.

Of course, the problems in L.A. are not information problems, they're problems of culture, organization, supervision and training. Better information management won't stem the corruption—but it might help detect it earlier and punish it more swiftly.


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In Box

EYE AND LOW

Thanks for your stimulating article, "The Eyes Have It" [CIO Section 1, Sept. 1, 1999]. It certainly made me think about what to focus on in designing and updating our own Web site.

I recall a couple old salesmanship platitudes that might address some of the questions around your 10 easy answers. Process-check and trial-close methods might apply in different guises in Web commerce. If a viewer is in a specific section, a few check boxes that ask for little time and slight commitment at first would help with some of the metrics and preliminary qualification. I thought about an exit survey, but it would be inconclusive and have little appeal unless bolstered by a direct marketing premium strategy. If you're able to accumulate a visitor's clicks and add them to a registration record as he works through the site, you can obtain some useful contact, feedback and content metric information.

Ed Turbert

*Inside Sales Manager
Scan-Optics Inc.
Manchester, Conn.
eturbert@scanoptics.com*

One way of constantly reinventing a Web site, thus making those elusive eyeballs return, is by creating portable portals. A very good example of portable portals is online trade fairs. These trade fairs can create an online environment of a bazaar by bringing together exhibitors and attendees. As interest wanes, the portal disbands, only to reconvene at a more opportune time or season.

Thus the portable portals move from place to place in search of the eyeballs, rather than face the uphill task of drawing the eyeballs to a fixed location.

Ramesh Sambasivan

*Cofounder
iTradeFair.com
Stillwater, Okla.*

STOP MAKING CENTS

In "Losing Our ¢," [Trendlines, CIO Section 1, Sept. 1, 1999], you state, "Today, getting the [cents] symbol takes a little more work.... In Word 6.0 for Windows, you have to hit Ctrl then forward slash and c."

Word 6.0? What time warp have you

been in? Word 6.0 begat Word 7.0, which begat Word for Office 95, which begat Word for Office 97, which begat Word for Office 2000. These days it takes Alt-0162 to make a ¢.

Eric H. Witte

*Harrisburg, Pa.
EWitteMD@aol.com*

COMPANY YOU

I enjoyed "Managing Me Inc." [CIO Section 2, Sept. 15, 1999]. I've not shopped for a job since 1985, enduring acquisitions, divestitures and a series of chief executives of varying temperaments. The downside to this loyalty is more limited exposure to new technologies, and compensation that hasn't taken the leaps associated with each new box of business cards.

By the way, *loyalty* is not mentioned in the Boy Scout oath, and is ascribed only indirectly, as "I promise...to obey the Scout Law," for which the second point is loyalty.

Brian Peabody

*VP of Information Technology
(and assistant scoutmaster,
BSA Troop 431)
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CORRECTION

We incorrectly identified a photo subject in Section 2 of the Sept. 15, 1999, issue ("Chain Safety"). Lee G. Wachter (above), former vice president and CIO of Olympus America, recently became senior vice president and CIO at UDV North America, a member of the Diageo family of companies. We apologize for the error.



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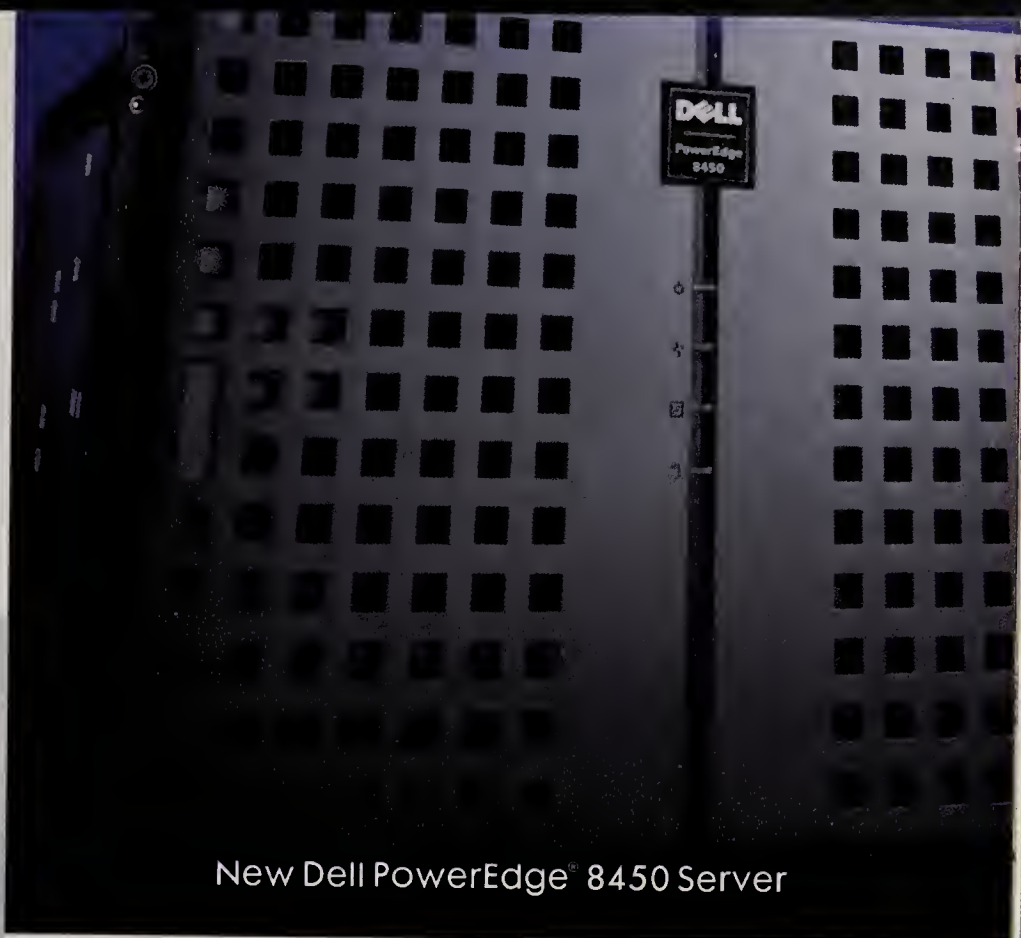
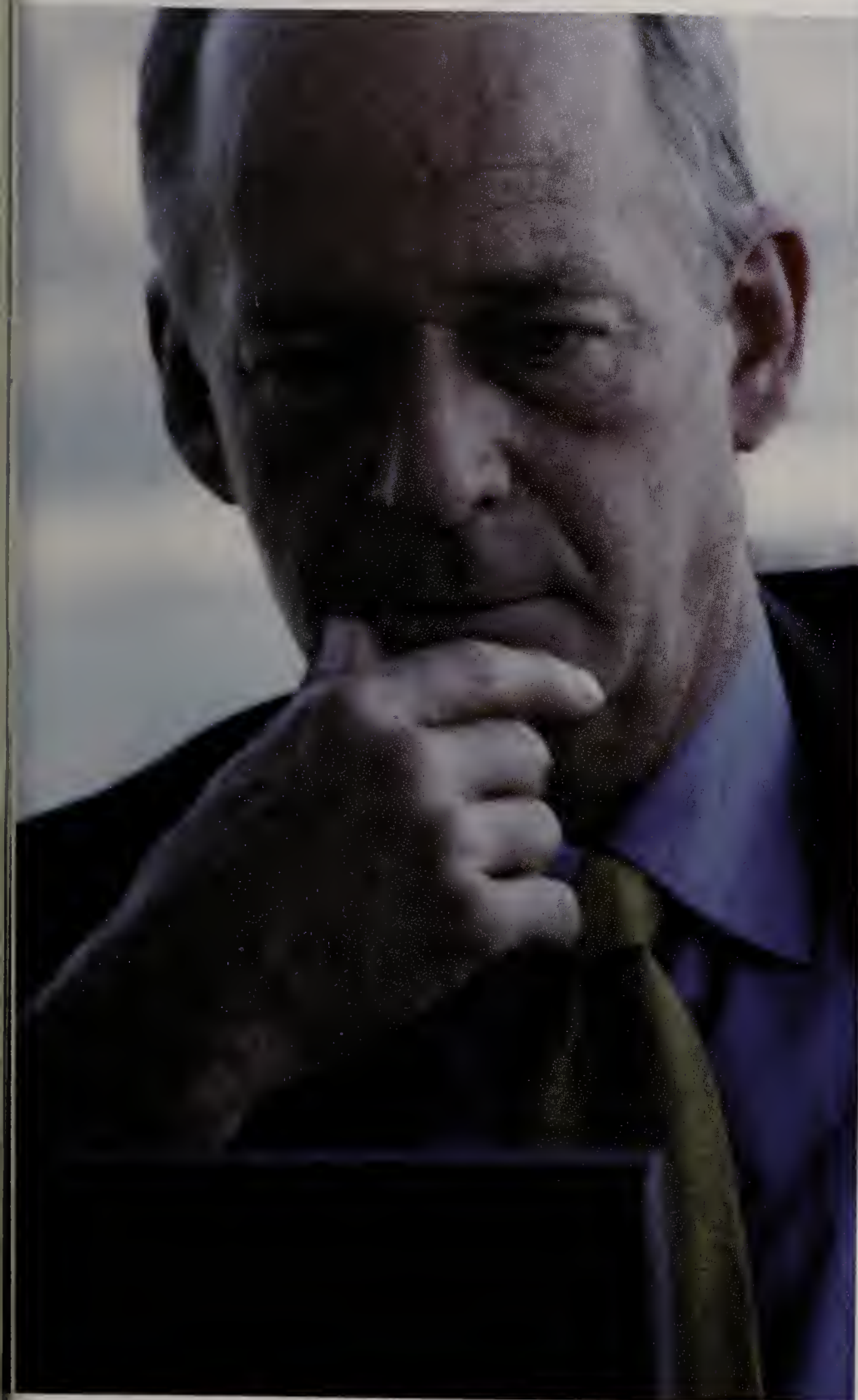
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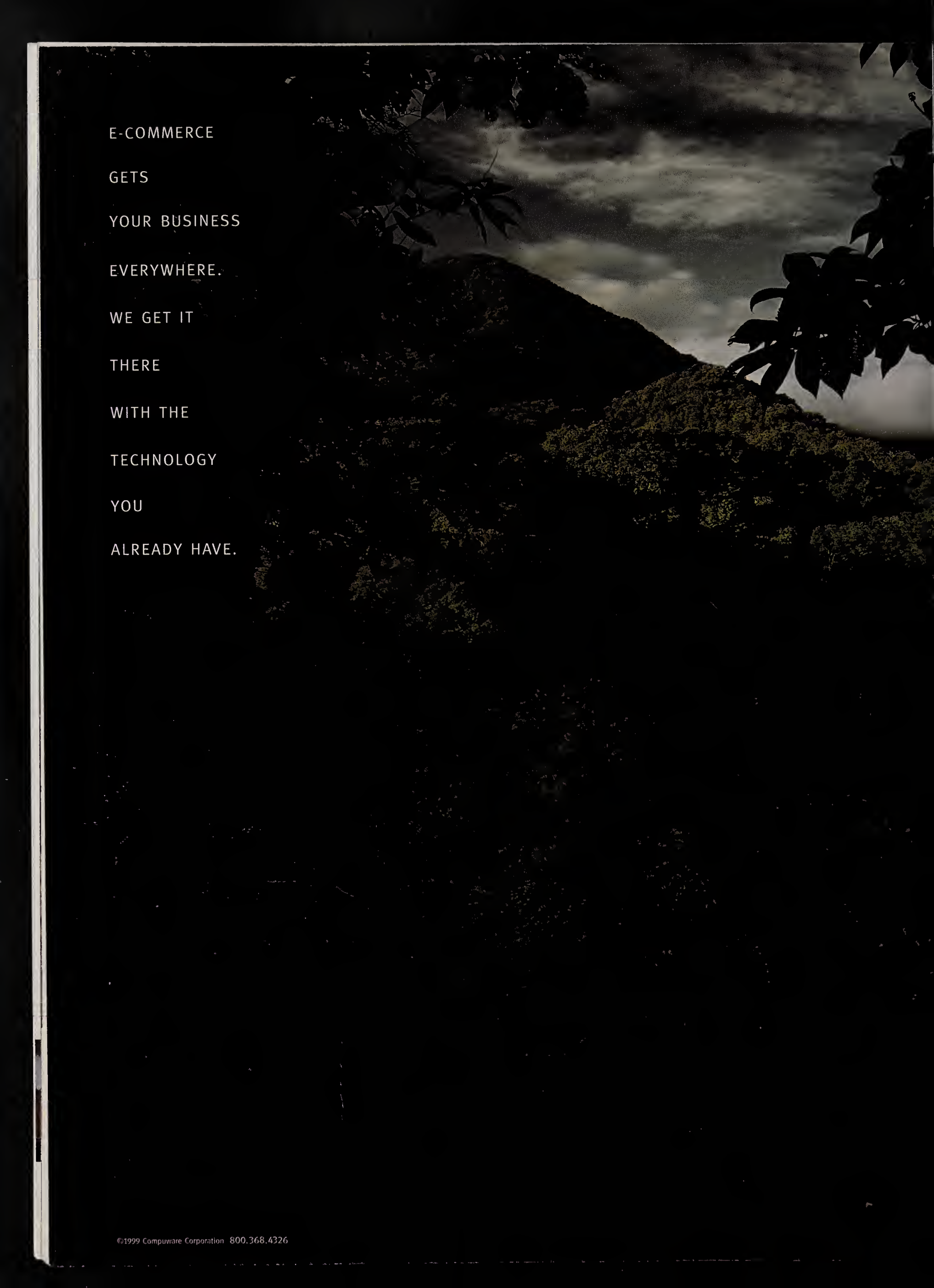
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A dark, moody photograph of a forest. The scene is dimly lit, with sunlight filtering through the dense canopy of trees, creating a pattern of light and shadow on the forest floor. In the center of the image, a wooden sign with the word "OPEN" in bold, capital letters is attached to a tree trunk. The sign is slightly weathered and stands out against the dark background. The overall atmosphere is mysterious and serene.

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Publisher's Note

Would you be willing to pay more for a soft drink from a vending machine on a hot, humid day in August than on a cold, blustery day in January? Of course you would.

Think of the products or services your company produces. Could dynamic pricing predicated on competition, scarcity of goods and external market forces positively—or negatively—affect your bottom line? Probably.



Robert J. Dolan, professor of business administration at the Harvard Business School, researched the 2,000 largest companies in the United States and found that a 1 percent increase in what he calls price realization can boost, on average, a company's net income by 12 percent. Price realization does not equate a price increase. Rather, think of your company's entire product line. Dolan is saying that if you could help your chief marketing officer (CMO) raise the average selling price of your entire product line by 1 percent, you could see the 12 percent improvement in net income. Not an easy task.

Neither is being a CMO.

Dolan is also coauthor of *Power Pricing*, a book in which he lists the following top 10 pressure points for chief marketing officers.

1. Pricing
2. Product differentiation
3. New product introductions
4. Managing the cost of selling
5. Improving product quality
6. Competitive knowledge
7. Market saturation
8. Government regulation
9. Staffing
10. Distribution challenges

How does the list compare with the project you are working on with your CMO? Take a moment to e-mail this list to him. Ask for his reaction. Possibly come up with your own list. The issues on the list aren't what matter the most, however.

What matters is this: For your company to remain—or become—competitive, the CIO and CMO must have their agendas in sync. If you are working on a back-office data warehousing project and the CMO is screaming for a state-of-the-art sales-force automation tool, opportunities and possibly careers will be lost.

Use Dolan's list as a starting point. The effective use of IT and smart marketing people is an awesome competitive tool. Use it wisely.

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November 1, 1999

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INTEGRATION

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SUPPLY CHAIN INTEGRATION: THE NAME OF THE GAME IS COLLABORATION

With football season upon us, beer makers want to get cans, bottles and drafts into the hands of their thirsty customers fast. But forecasting and supplying the right amount of beer for distributors, and then supplying it at the right time at the right time is no chip-shot field goal for brewmeisters.

That is why Heineken USA collaborates with its 450 North American distributors over the Internet. By planning and shipping brand of alcohol expeditiously, Heineken has shortened its cycle time from three months to four weeks. This means that consumers get fresher products and Heineken can cut its inventory levels and costs, as well as boost sales.

"Because we have reduced lead time, we can produce the beer closer to the time when we will need to deliver it, so the customer will get fresher beer," says Andy Thomas, director of operational planning with Heineken USA, a White Plains, N.Y. subsidiary of Heineken NV, the world's second largest beer distributor.



For companies like Heineken, collaboration is the name of the game in supply chain management (SCM). Increasingly, companies are extending their focus from internal operations like planning and scheduling, enterprise resource planning (ERP) and sales force automation, toward relationships beyond their own four walls with external customers and suppliers. Organizations are looking for the perfect virtual enterprise that will link their supplier's suppliers to

BY EMILY KAY

their customer's customers, all of whom will operate together like a well-oiled machine with seamless connections among back-end transaction ERP and legacy systems, data warehouses, manufacturing and inventory-tracking systems, customer support solutions and Web servers.

That may well be what everyone is seeking. Getting there, however, is the challenge. "The real holy grail of

ing Candle's application integration business based on Roma, its flagship software suite of products, tools and services that help companies link their supply chain applications.

A shoe retailer (which asked that its name not be used) using Roma expects to reduce the time it takes for an order to be placed to delivery from three days to three hours, says Craggs. Although it's too early for

components, but companies like the shoe merchant often require integration help from providers like Candle. No middleware is simple to implement, Craggs cautions. "Enterprise application integration stuff looks magical," he says, "but it is absolutely not an out-of-the-box technology today."

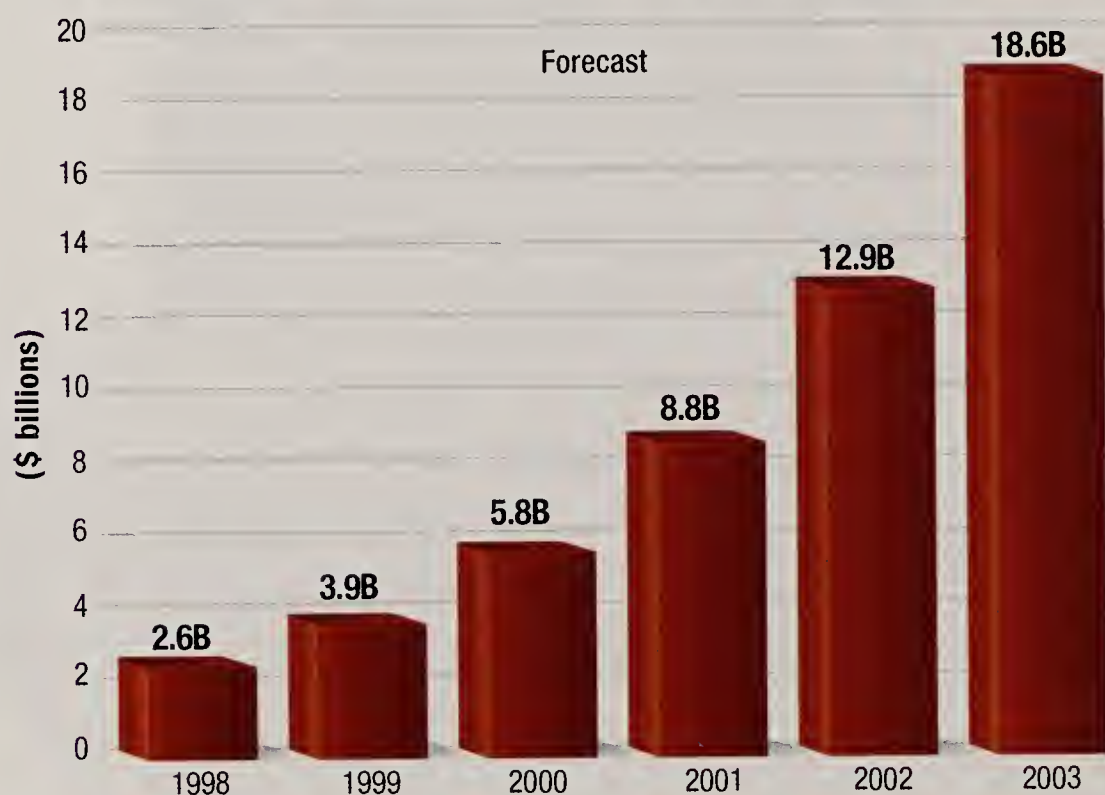
BUILDING WOES

Middleware construction is no simple feat. "A lot of off-the-shelf packages appear to be plug-and-play and they're not close to that," says Joe Cahill, vice president in charge of the supply chain practice of Waterstone Consulting, a business consulting and systems integration firm in Des Plaines, Ill.

Waterstone built customized middleware links between the systems of a heavy equipment manufacturer (which did not want its name used) and its dealers' Internet browsers to conceal the complexities from the end users. The manufacturer, which sells after-market parts and services, plans to migrate to SAP's R/3 ERP system next year and expects to add a customer relationship management solution in two years, but did not want to wait until then to start its supply chain initiative. Waterstone's solution will enable the dealers to move to R/3 without knowing what runs on the back end. "The real challenge is to get a front end that sits at the dealer and is transparent to the dealer," says Cahill. "They have no idea where they're going for the information and they don't care."

The effort will be well worth it if the manufacturer can realize its goals of slicing order cycle time from one week to one day, boost fill rates from about 90 percent to 98 percent, and increase its share of the after-market parts and service market to 40 per-

Worldwide Supply Chain Revenue, 1998-2003



Source: AMR Research Inc., 1999

an end-to-end supply chain linking suppliers and partners in a closed loop is still largely a fantasy," says Joshua Greenbaum, a principal with Enterprise Applications Consulting, a consulting firm in Berkeley, Calif.

One of the most time-consuming and expensive challenges involved in integrating multiple and disparate supply chain components is the use of middleware. Three years ago, El Segundo, Calif.-based Candle Corp. hired Steve Craggs as vice president of enterprise applications integration. He was charged with develop-

ing the company to offer specifics—the company has only been using the software for four months—it has already "dramatically" decreased its time to market, says Craggs. The retailer uses Roma to link its i2 Technologies SCM system with SAP's R/3 ERP software, a Web front end and homegrown mainframe applications running on the factory floor. The retailer's supplier runs MVS on the back end, and a mix of Unix and NT platforms.

An open solution, Roma enables a company to integrate best-of-breed

cent. In any case, the manufacturer believes the system will pay for itself within two years, says Cahill.

Although the truly integrated supply chain has not yet become mainstream, it will happen in the next few years, according to Mike Fabiaschi, president and chief executive of LPA Software Inc., a service-parts lifecycle management provider in Rochester, N.Y. "As tools get better, people's visibility into others' systems gets better," he says. "And as they become confident in their suppliers and vendors, that breaks down the barriers and [the integrated supply chain] happens."

For example, data warehousing and decision-support tools from SAS Institute Inc., in Cary, N.C., help companies obtain supply chain data and make strategic decisions involving their supplier bases. Customers "can use our data warehouse system to extract data" from transaction systems like SAP's R/3 ERP software, says Christine Kelly, program manager for SAS' procurement solutions, North American division.

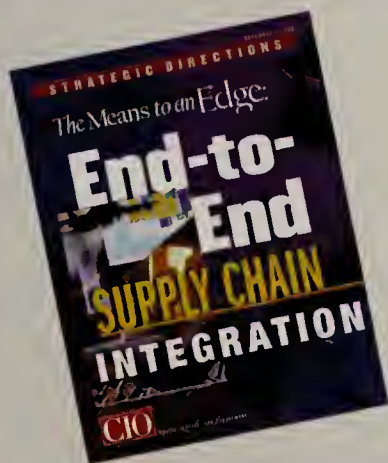
Although technical questions such as middleware continue to pose obstacles to integrating an organization's business partners with its ERP, Web and other systems, analysts believe such questions take a back seat to cultural barriers, which are harder to overcome. "Technology is the easy part," says consultant Greenbaum. "Getting companies to open up their supply chains to partners and suppliers to give them visibility [into the company] is the tricky issue."

To be sure, changes in how people do their jobs keep many companies from expanding their supply chains beyond their internal operations. The fundamental challenge is "that, for the first time, people who traditionally never trusted each other—manufacturer and retailer, manufacturer and distributor—all have to truly collaborate and trust each other," says Mohsen Moazami, vice president in charge of the global e-commerce practice with Kurt Salmon Associates Inc., a retail SCM consulting firm in Los Angeles.

"A tremendous amount of work needs to take place to set up inter-enterprise processes for people who never collaborated on anything to trust each other," he says. "Imagine the magnitude of change management and touchy-feely stuff that has to take place for that business reality to take place."

Indeed, managing business processes across an extended supply chain is one of the largest problems companies face as their supply chains get wider, says Malcolm Lewis, market strategy director for Vitria Technology Inc., a supplier of e-business infrastructure software in Sunnyvale, Calif. "Until now, the reason that many companies did not engage in large extended supply chains was that as soon as they handed off information to a supplier or partner, they lost visibility and control of the process," he says.

Certainly organizational, cultural and operational issues are hard to resolve. That doesn't mean, however, that it's a slam dunk for organizations when it comes to physically



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integrating their supply chain systems with their supply chain partners and customers. Often such connections require companies to seek outside help. That is what the heavy equipment maker did last summer when it hired Waterstone Consulting to help orchestrate its dealer network with its 15-year-old IBM mainframe system.

A team of six IT and business people from Waterstone and the manufacturer spent nine months integrating the mainframe with inventory systems and electronic catalogs running on disparate platforms (including Microsoft Access and Oracle databases), as well as with a handful of dealers' business systems running on six different platforms, says Waterstone's Cahill. The new system will help dealers place and expedite orders, check on inventory and order status, access an electronics parts catalog, as well as check on the inventory levels of other dealers.

As in the case above, the ordeal of extending supply chains outward to trading partners and customers requires more resources and effort than some companies can muster. That's where outsourcing and applications hosting providers hope to take over.

"From 1985 to 1997, industries invested billions of dollars [in ERP and SCM solutions] and have not gotten significant business returns on investment from that," says Terry Hisey, vice president and general managing principal of information services with Unisys Corp., a supply chain consultancy and integrator in Blue Bell, Pa. "They're starting to recognize they need to focus on the customer."

Fabiaschi of LPA Software agrees. "Most of our customers would not view service parts planning and forecasting as their core competency," he

State chooses Roma suite to unlock statewide data resources

The fast-growing state of North Carolina has responsibilities that keep 23 executive-branch agencies busy, with tasks ranging from tax collection to prison management. Each agency has its own IT department. "Traditionally, the agencies developed applications by automating individual lines of business," says Emilie Schmidt, the state's CTO.

Schmidt's group, which is responsible for developing the statewide IT architecture, had to overcome the problems created by having a diverse set of computing environments with stovepipe applications. "One frequent problem was the need for an agency to communicate outside its line-of-business applications," Schmidt says. "The existing systems weren't written to do such things."

The only solution was to write custom interfaces between systems. Programmers from different agencies had to learn each other's applications, infrastructures and environments. But developing and maintaining custom interfaces was costly. "Agencies had to keep track of which systems they interfaced with, so they could make corresponding changes each time other agencies changed their systems," says Schmidt. "They had to know whether the person who wrote the interface was still working there, and whether the interface was well-documented."

To address these problems, the state established a cross-functional committee with agency participation. The committee found that the agencies had two primary concerns: maintaining the freedom to choose their individual environments, and finding a consistent way to communicate outside their applications.

With these requirements, Schmidt's group issued an RFP and evaluated several proposed solutions. None met the agencies' needs. Then her group investigated Candle Corp.'s Roma Enterprise Integration Application (EAI) platform and found that the Roma suite offered the desired seamless cross-platform integration. "Roma was the only product that addressed our total requirements," Schmidt says.

The state tested Roma during a nine-month pilot that allowed the Wildlife Resources Commission to access driver's license information held by the Department of Transportation. This allowed the agency to expedite issuing a hunting or fishing license for anyone with a state driver's license. The service has been in production since the pilot phase ended in January 1999.

"The agencies still have the same traditional stovepipe applications," Schmidt says, "but they are beginning to write discrete services outside those applications." She expects that eventually, all 23 agencies will take advantage of the EAI capabilities of the Roma suite.

Another benefit to using Roma is the loose coupling it allows among systems, a key for an organization with such a broad range of computing environments. "The state is so large that we have a very mixed environment that probably includes everything available on the marketplace," Schmidt says.

Although it is early, it is clear that Roma will improve the state's response time for integration and has the potential to reduce application maintenance and development costs. Above all, the EAI suite has enabled the state's business processes to dictate its systems needs, rather than vice versa.

The Analysts Speak Out on Roma for EAI

"Flexible e-business"

Jeanine Fournier and Valerie O'Connell
Aberdeen Group, Impact, 5/20/98

"Unique"

Dave Kelly, Hurwitz Trend Watch
"Lighting Up EAI with Candle", Hurwitz Group, 3/18/99

One-stop shopping

Montgomery Research, Inc.,* 1999

"End-to-end solution"

Susan Eustis
Wintergreen, 1999

"Candle's new vision and accompanying Roma product family take dead aim at business needs for a flexible e-business infrastructure."

"Roma's component platform, application manager, and repository capabilities are unique."

"Candle is a 'one-stop shop' for Enterprise Application Integration projects that allow corporations to unlock the power and potential of their business information systems."

"Because of the breadth of the Roma solutions, there is no single competitor. In fact, Roma is a better product than those offered by the competition because it provides an end-to-end solution for transactions."

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says. "This is something they have an outside company do and they don't have to worry about running and maintaining it."

Corporations are beginning to offload aspects of their supply chain management operations. Three customers are about to enlist LPA's services, and Unisys is set to sign its first applications-hosting customers as well. "It's new for us, but we're def-

and consulting services, also enables decision support, collaboration and communication among LPA products via the Web.

QUICK START

All but one of Syncra Software's 15 customers take advantage of its applications hosting services, says Matt Johnson, chief technology officer of Syncra, a business-to-

Using the Web, Syncra Ct helps synchronize planning and forecasting among different departments within one company or among trading partners in an extended supply chain. The software transmits customer demand and replenishment requirements between groups or companies in a standard industry form, and notifies users of new promotions, variances in plans and other exceptions.

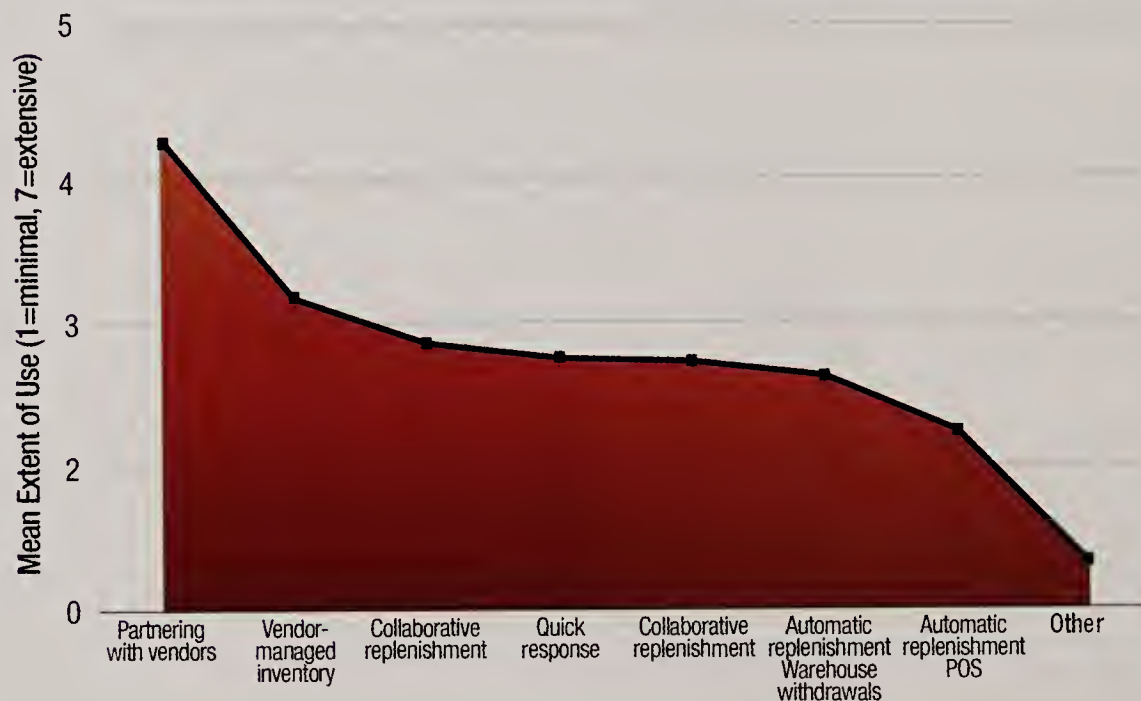
Unisys focuses on customer-centric improvements to supply chain planning and execution, such as inventory management and forecasting, order and warehouse management, distribution and transportation. Unisys operates under a new e-business model that has changed companies' supply chains dramatically, according to the company. The Web offers an additional channel into a company, in addition to its traditional sales force, distributors and brokers.

"The reality in today's world is that customers, not the manufacturer or distributor, are selecting the channel," says Hisey. "The manufacturer needs to be able to respond flexibly and quickly to whatever channel the customer selects."

As an outsourcer, Unisys manages the inventory control and dealer support network for a major automobile company. Under outsourcing agreements, companies own the software applications and pay Unisys based on traditional service level agreements, according to Hisey.

The SCM applications hosting business is just getting off the ground and Unisys expects to enlist its first clients soon. For applications hosting, clients will pay Unisys and its best-of-breed software vendor partners based on transaction volumes.

Use of Supply Chain Integration Practices



Source: KPMG 1999 Global Supply Chain Benchmarking and Best Practices Study

The most widely used supply chain integration practices, in order of popularity, are partnering programs with vendors, vendor-managed inventory, collaborative forecasting, quick response (QR), continuous replenishment based on warehouse withdrawals and automatic replenishment based on point-of sale (POS) data.

initely moving down that path," says Fabiaschi, who expects LPA's outsourcing business to pull in several million dollars next year and to double each year after that.

LPA's flagship product, called LPAVision, runs on Windows NT and provides planning and forecasting functionality so that aerospace, automotive, high-tech and telecommunications corporations can manage service parts inventories, reverse logistics and maintenance repair and overhaul. LPA, which provides implementation, training

business software vendor and integrator in Cambridge, Mass. Customers "can get started so fast because they don't have to procure the hardware," he says, "and they don't need software on the desktop other than a browser." Syncra gets its customer up and running within two weeks, according to Johnson, who touts his company's full-service, Java-based offering that starts with its Syncra Ct software. "We provide backup, security, user administration, product hierarchy and maintenance."

Lessons learned

- Involve business and IT people from the manufacturer/retailer, dealers, systems integrators at the outset of the extended supply chain project. "You want to get them the vision, to feel involved and empowered," says Joe Cahill, VP in charge of the supply chain practice with Waterstone Consulting, a business consulting and systems integration firm in Des Plaines, Ill.
- Before deploying SCM systems, make sure business-to-business communications are solid. "People wonder how they'll gain benefits if they're sharing bad forecasts," says Matt Johnson, chief technical officer with Syncra Software Inc., a provider of Web-based business-to-business software in Cambridge, Mass. "Bad communications are like a retailer running a promotion on a different week than your supplier thinks you are, or not realizing a promotional item has been discontinued. You don't need forecasting systems to identify these things."
- You can't change supply chain partners' responsibilities and relationships overnight, so deploy pilot projects first. "The real challenge is to get there without going too fast," says Cahill. "You have to evolve there one step at a time."
- Start training early and don't underestimate training requirements. It takes more time to deal with cultural and political issues than most companies recognize, Cahill notes.
- Sharing forecasts between retailers and manufacturers is only one step in collaboration, according to the first phase of a pilot collaboration program between Nabisco Inc.'s U.S. Foods Division and its supermarket chain customer, Wegmans Food Markets Inc. Collaborative supply chain software applications must be integrated with automated demand planning solutions to extend the collaboration process to include multiple products and trading partners.
- Choose a few key supply chain processes on which to collaborate.

"That will become a larger and larger part of our business," Hisey predicts, noting that companies will opt to have Unisys host their applications so they don't lock themselves into solutions or have to make a significant capital investment upfront. As with outsourcing, he adds, application hosts will enable clients to fo-

cus more on their core businesses and not have to become experts on SCM applications.

"We'll take a series of solutions and continue to build libraries of enhancements so [our clients] will get economies of scale and experience as we build a value-added competency," says Hisey.

The business may be slow to develop, but organizations appear to want the services that suppliers like LPA, Unisys and Syncra offer. "Our hosting service evolved out of a need," says Johnson. "IT organizations don't want to manage [SCM] resources. They want a third party to manage them."

NO WEAK LINKS

Companies use supply chain management software from vendors such as i2 and Manugistics Inc. to join each component of their supply chain, from order entry, to manufacturing facilities, through distribution and fulfillment operations. Further linked with Internet technology, SCM software lets companies extend their supply chains outward to suppliers and customers for more accurate inventory prognoses and materials acquisition.

Organizations use SCM software internally to great competitive advantage. Many have enhanced customer service, improved the accuracy of forecasting, cut inventories and costs, and gotten products to market faster. For instance, some 60 percent of 190 companies surveyed by KPMG Consulting in Tysons Corner, Va., for its 1999 Global Supply Chain Benchmarking and Best Practices Study are attaining at least a 90 percent perfect order rate. In a similar survey two years ago, KPMG found that not only were many respondents unfamiliar with perfect order measurements, but many more of them were not even collecting the data needed to measure such rates.

In addition, U.S. companies spend an average of 25 percent of corporate budgets on SCM for items such as inventory carrying costs, materials procurement, transportation, order management, supply chain fi-

nancing and related IT expenditures, according to Palo Alto-based Categorical Software Corp.

Even so, says Anne McVey, vice president of marketing for Categorical, manufacturers and distributors have spent so many years refining manufacturing efficiencies and quality practices that even the most proficient manufacturers will be able to squeeze at most another five percent in cost reductions from within their organizations. Categorical's Categorical Alerts '99 software links IT systems across an organization and warns staffers about critical business events within 24 hours.

OVERCOMING PARALYSIS

It's the brave new world of extending supply chains outward that have most organizations still awaiting the kickoff. Certainly some companies on the leading edge are meeting the challenge today, but many others remain "paralyzed"

Many companies know what they should do, but the cultural, organizational and technology issues are dizzying at this point.

by the prospect, says Waterstone's Cahill. "They know what they should do," he says, "but the cultural, organizational and technology issues are dizzying them at this point. A lot of people's heads are just spinning over this."

Small wonder, however, that they want in the game. "With an average of 60 percent of product costs driven from outside of the corporation, companies are quickly turning their attention outward towards customer and supplier relationships as the most leveraged source of future improvements in expense reduction and profitability improvement," says McVey of Categorical Software.

Despite the many potential gotchas lurking, getting beyond them and into new ways of relating to supply chain partners is critical for companies entering the new century. That means that supply chain associates must work together on product planning, forecasting, manufacturing, distribution and delivery. It also means that trading partners must collaborate to deal with changing responsibilities and jobs.

Certainly, achieving the nirvana of end-to-end supply chain integration means overcoming many obstacles, but companies that are in the game are experiencing significant benefits. So why wait? asks Syncra's Johnson. "It's so easy to turn this

Inventory planning tools help Dell beef up customer service

Dell Computer sets the standard when it comes to speed. Dell rapidly incorporates new technology into its PCs, servers and notebooks, quickly configures the computers to customer demand, then delivers the products fast. That's when Dell service takes over.

Dell provides next-day service to the majority of its customers. "We strive for an overall customer satisfaction experience," says Lisa Wight, business manager in Dell's Service Logistics group. "A big part of that experience is our ability to honor our warranty commitment. If a customer requires service, we need to get the right part to the right place at the right time."

For these reasons, Dell has chosen a product from LPA Software in Fairport, N.Y., to manage its global network of parts inventories. The company implemented LPAVision, an inventory planning tool focused solely on after-market parts applications. Dell currently has installations in the U.S., Europe and the Pacific Rim, with more to come.

The system's key differentiator is its ability to reconcile the numerous sources of demand with the myriad options for sourcing that are unique to service, including transfer, repair, upgrade and

de-manufacturing. The result is a degree of inventory optimization that cannot be achieved by applying typical manufacturing tools to the service planning problem. "LPAVision allows us to factor in the yield on reusable parts into our supply projections," says Don Smith, business analyst at Dell. "This enables us to use repairable parts to compress overall lead times and reduce costs."

Dell implemented LPAVision in just three months. "LPA helped us configure their software for our business," says Smith. "They spent several days with us on-site and probably shaved weeks or even more off of the implementation time by the expertise and knowledge they transferred to us."

"LPA has some of the best consultants around for implementation and deployment of software systems," adds Wight. "LPA helped us set up the software's parameters and make decisions about service strategies."

Wight adds, "The information generated by LPAVision helps ensure that we are not growing our inventories at too great a rate, but rather, keeping it constant while maintaining and improving our high service levels. This is very important information for our executives."

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into some massive undertaking," he says, "when it takes little to get started and get some early benefits."

An example of that would be the collaboration between Nabisco Inc.'s U.S. Foods Group and its supermarket chain customer, Wegmans Food Markets Inc. The two have shown significant bottom-line results during a pilot project to test an industry-wide extended supply chain initiative called Collaborative Planning, Forecasting and Replenishment (CPFR). As part of the CPFR pilot, both companies formed teams to develop a joint business plan, define goals and develop a partnership to improve information-sharing throughout the supply chain.

CPFR is an industry group consisting of more than 30 consultants, manufacturers and retailers, including Benchmarking Partners, Nabisco, Kmart, Levi Strauss and Co., Procter & Gamble and Wal-Mart, as well as supply chain vendors such as Manugistics and Logility Inc. It involves new business practices that require tight integration among trading partners, and uses electronic data interchange (EDI) and Internet technology to reduce inventories and expenses while improving customer service. As part of CPFR, the Voluntary Interindustry Commerce Standards (VICS) association publishes guidelines to help manufacturers, distributors and retailers work together for better planning, forecasting and replenishing of products.

What the concept comes down to is defining how a retailer and say, a toothpaste maker, can work together electronically to develop synchronized forecasts for product demand. While it may sound simplistic, it's anything but, particularly for a huge retail chain like Wal-Mart, which must stock thousands of items in each of its hundreds of stores. Wal-

Tracking suppliers with supplier relationship management

Let's say you're in the business of making cars. To do this, you need a long list of materials, including steel, glass, tires and spark plugs. That's your direct spend. If you don't buy those supplies, production lines go down and your cars won't appear on showroom floors. But there are myriad other costs you incur every day just to stay in business, such as for computers, paper, pens and office furniture.

Often, companies struggle with understanding their supplier landscape, working to get a handle on how much and what they buy. That's where SAS Institute Inc., a leader in integrated data warehousing and decision support, and Dun & Bradstreet, a leading provider of business-to-business information, can help. The companies have developed a solution called Supplier Relationship Management (SRM) that allows customers to understand their supplier relationships by consolidating and classifying their purchasing data.

SRM helps companies identify their top suppliers, see how much they are spending with each supplier, determine how much a particular supplier depends on them for business, and figure out ways companies can leverage their buying power, as well as other details. "Knowing

these answers could result in savings from 5 to 15 percent of a company's purchasing budget," says Christine Kelly, SAS Institute's program manager for SRM.

It is imperative that companies consolidate the data on their suppliers. "The ability to understand who you are buying from is a key component of this solution, and that's one of the main advantages that D&B brings to the table," says Larry Barth, vice president of supply chain solutions, D&B. The company has developed two classification systems to determine appropriate identification processes. Every supplier is identified with a D-U-N-S Number, which is like a Social Security number for businesses. Commodities are classified by the UN/SPSC system, which is emerging as a global standard for classifying goods and services among corporate and government purchasers. These protocols provide a clear landscape of what companies are buying, and from whom.

With SAS Institute's decision support tools, companies can build procurement models based on this information that can result in profitable supplier strategies. "In this competitive environment, companies need all the help they can get to make the most informed business decisions," Kelly says.

Mart creates a weekly forecast demand for each product on the shelves—down to every size of aspirin bottle, fragrance of soap, etc.—for each of its stores.

The amount of information involved is enormous, but the challenge grows dramatically when the retailer has to match its data with suppliers' inventory and ordering forecasts. With a CPFR standard in

place, retailers could send their forecast data electronically to suppliers via a CPFR server, which would automatically compare retailers' and suppliers' forecasts and alert them when their figures don't match up.

Prior to working with Logility on a four-year, \$2 million CPFR-inspired supply chain system, Heineken USA used a homegrown forecasting system and "would guess

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Inacom gains end-to-end control of service and support processes

Inacom supplies an integrated set of services to help its clients design, procure, build, install and manage their distributed IT environment. Increasingly, Inacom's customers, many of whom are Fortune 500 companies, were demanding that the company track and honor complex service level agreements (SLAs). Each SLA provided for a different response time to resolve service requests and a different set of penalties for failure. Moreover, customers were constantly revising these agreements. They also wanted proactive notification of when a service request could not be completed within the agreed-upon time limits, as well as the ability to check on the status of individual requests.

To meet these demands, Inacom needed to automate its service and support value chain—from initial receipt of a service request, through the dispatch of field service engineers and the allocation of replacement parts, to problem resolution and billing. Such an effort would require Inacom to integrate previously standalone customer help desk systems with its internal service dispatch application: a legacy AS/400-based system. It would also require Inacom to automate its business processes for fulfilling service requests and customize those processes for each customer.

After evaluating enterprise application integration (EAI) solutions, Inacom selected Vitria Technology in Sunnyvale, Calif., for BusinessWare, its unique combination of robust plumbing, which included application connectivity, messaging and business process automation. BusinessWare enables plug-and-play inter-

operability between Inacom's customer help desk applications and the service dispatch system. BusinessWare Connectors integrate applications by mapping proprietary communication protocols and data formats to and from open Internet standards to integrate the entire system. BusinessWare Communicator's publish-and-subscribe mechanism allows component applications to communicate with each other simply by "publishing" events they want other applications and processes to access or by "subscribing" to events upon which they need to act. For example, a customer help desk application can "publish" an event requesting service; the service dispatch system in turn "subscribes" to that event and can then act upon it.

"BusinessWare makes it easy for us to integrate new applications into the system simply by using existing Connectors or by writing new Connectors," says Michel Langlois, middleware project manager at Inacom. "Automator allows us to easily develop and modify the business processes for each customer using a graphical tool without the heavy programming required by other middleware solutions."

In May, Inacom's Service Interchange system went into production with its first test customer. The BusinessWare solution has empowered Inacom managers with end-to-end visibility and control of their service and support processes—helping them to quickly identify and resolve bottlenecks and ensure fast and reliable service. It has also allowed them to model and enforce SLAs across multiple systems.

what a customer was going to buy from them weekly and monthly," says Andrew White, vice president of product strategy with Logility, in

In addition, because Heineken did not stock inventory in Europe, the brewer inevitably produced more beer than was needed. "There was

Web-enabling supply chain processes isn't enough. Suppliers and customers sharing information and jointly getting the right forecast is key.

Atlanta. "The forecast was inaccurate, customers would place orders when they wanted, there was a short lead time, they'd expect immediate delivery and a high service level."

lots of poor service because the forecast was always wrong," says White. Web-enabling supply chain processes isn't enough, he says. "Sharing information and jointly getting the

[right forecast] is key to CPFR. It's not just integration or doing EDI or sending stuff over the Internet. That's easy. It's: 'I agree to buy X, you agree to sell me X.' That number is integrated with both companies' systems and becomes the customer order."

Logility developed the Web-based Heineken Operational Planning System (whose acronym is, appropriately enough, HOPS) to improve communications between the beer maker and distributors, correct irregular inventory management and improve business processes. HOPS, which can perform real-time fore-

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casting and ordering with distributors, connects Heineken to distributors via an extranet, a private network based on Logility's Resource Chain Voyager XPS forecasting and replenishment software. Using a standard Web browser, distributors log on to customized Web pages to view their sales forecasts, submit and change orders.

HOPS, which operates on an Oracle 7.x database running on a Compaq Proliant 5000R server with Windows NT and Website Professional Web server software, can also link salespeople to the central database via an intranet. The database houses distributors' sales histories, inventory levels and promotional calendars.

The collaboration project produced results because it enabled a manufacturer and a retailer to synchronize their promotion plans and budget.

Using the Oracle database, the Logility Demand Planning module creates a demand forecast for each Heineken distributor. Distributors log on to the Heineken Web site to view the forecasts for their territories. They can approve or modify the forecasts online and forward them to Logility's Replenishment Planning module, which computes the distributors' inventory needs by comparing actual inventory levels with the newly forecast levels. The replenishment plans come back online to the distributors, who approve them. The system then creates an electronic purchase order.

CPFR can bring substantial results for participating organizations. Through a Web-based applications-hosting pilot with supply chain management vendor Manugistics, both

Nabisco and Wegmans have realized such significant sales growth in nut products that they will extend their pilot program using Manugistics' NetWorks software, says Jeff Holmes, vice president of North American sales operations with Manugistics in Rockville, Md. NetWorks is a business-to-business, e-commerce solution that collaboratively creates and maintains joint business plans, monitors the execution of those plans, and measures their success.

Manugistics hosted the application for 13 weeks beginning in June 1998. During that time, Nabisco and Wegmans users would log in using Web browsers to the NetWorks software running on the Manugistic NT

host server and share forecasts, point-of-sale data and promotional schemes dealing with Planters products. The system automatically alerts both companies if demand planning data from Wegmans and supply planning data from Nabisco do not match up.

Both food companies extended the pilot to 26 weeks to include additional grocery items. Manugistics owns the software and provides business process consulting as well. "It's not just plug-and-play on the software," says Holmes. "It's how do you change the business process to accommodate this?"

The project, which enabled Wegmans to grow sales of all salty snacks—not just Planters peanuts—more than 40 percent, also reportedly enabled Nabisco to reduce in-

ventory by 18 percent at its customers' distribution center. It also involves Syncra Software and its Syncra Ct Web-based business-to-business supply chain collaboration software, and Benchmarking Partners, a research and consulting firm in Boston.

SYNCHRONIZING PLANS

The collaboration project produced results because it enabled a manufacturer and retailer to synchronize their promotion plans and budget. "Typically a manufacturer has a promotional plan, budget and demand plan of what they think they're going to sell. The retailer has a promotional, merchandising and procurement plan based on what they think they're going to sell," says Holmes. "Rarely do they coincide."

Syncra's Johnson agrees. "In the past, there was no systematic way to compare multiple organizations' plans," he says. "There might have been monthly meetings, but they were usually after the fact, to clean up after a mess. CPFR helps you get a forward vision of issues and attack them."

The Nabisco/Wegmans project has succeeded so far because the two companies are operating in sync. "We are now able to manage the extended supply chain with a customer to include planning and forecasting of brands, achieving greater flexibility and control," says Joseph Andraski, Nabisco VP of customer marketing.

Jack DePeters, Wegmans' director of grocery, dairy and frozen, agrees. "We look forward to expanding our collaborative planning, forecasting and replenishment programs to include other suppliers along our supply chain," he says.

Of course, CPFR projects are not without bumps in the road. At the start of a four-month pilot program

with Syncra, Greg Mueller, replenishment supervisor with The Sports Authority, a sporting goods retail chain based in Ft. Lauderdale, Fla., was challenged to provide the necessary personnel to load forecasting data into the Syncra Ct Web client. "The detail was cumbersome until we got passed the learning curve," says Mueller, who hopes the pilot will show improvements in order fill rates with its vendor partner, New Balance, a Boston-based maker of athletic footwear. The effort required a team of four cross-functional IS, purchasing and replenishment staffers from The Sports Authority and New Balance to provide data to Syncra, which is responsible for uploading and maintenance.

Once Mueller's team had jumped

The supplier hopes that better understanding of what time to order will lead to decreased inventory, increased accuracy and a higher fill rate.

that hurdle, they were off and running. "The software is friendly, has lots of good information, and," says Mueller, "right off the bat, in looking at New Balance's forecasts, we could see huge variances in what they and we were forecasting."

In just the first month of the pilot, Mueller hopes the test of CPFR practices will yield a 10 percent decrease in overall inventory, a 10 percent increase in forecast accuracy, and a 95 percent fill rate (up from the mid-80s today). "We think that will

happen by enabling us to better understand when we order and at what times," says Mueller.

In time, SCM systems will eventually have an impact on users similar to the one ERP systems have had, according to AMR Research Inc., a market research firm in Boston.

In fact, supply chain management products from ERP vendors such as SAP and Oracle will help generate user interest in buying SCM applications from vendors such as EXE Technologies, i2, Inter-

Business analysts freed from scanning drudgery

Quantum Corp., in Milpitas, Calif., faced two key challenges in its process of manufacturing hard disk drives and other storage components.

1) Streamlining the component supply process to lower on-hand inventory. Quantum's traditional ordering process involved many phone calls and manual inventory checks. To ensure that production would not be interrupted, the process required high levels of on-hand inventory. Quantum needed a solution that would automate the ordering process to increase efficiency, reduce on-hand inventory to three days, and provide buyers with more time for non-transactional tasks.

2) Improving the quality of the component data in its Material Requirements Planning (MRP) system. Incomplete and inaccurate data were causing delays in production. The existing solution of manually reviewing reports to identify errors was not only labor-intensive but was occurring too late to be of use; problems in production were experienced before the reports were even reviewed. Quantum needed a solution that could catch problems before they caused production delays.

To automate its component supply process, Quantum initiated a system to e-mail reorders to suppliers using an event detection and notification solution from Categoric Software in Palo Alto. The Categoric Alerts system scans Quantum's databases twice daily, assessing material requirements from one application module

against inventory levels tracked in another. Orders are initiated and sent to suppliers as needed, allowing suppliers to make regular deliveries that match Quantum's production schedule. The system not only notifies suppliers of the quantity of components required in the immediate orders, but also gives them a window into the amount of inventory on hand and future weekly requirements.

To elevate data quality, Quantum implemented Categoric Alerts to catch any data errors or omissions in its MRP database. Categoric Alerts notifications are now sent whenever any critical MRP data falls outside the existing operational parameters.

Response to the new component ordering system has been highly positive. "The estimated value of the improved ordering process using Categoric Alerts is millions of dollars in inventory reductions," said Rob van Herk, business systems analyst manager for Quantum. The buyers have reduced transactional tasks and both sides get "a lot more information with a lot less work," he says.

Reaction to the data quality notifications built into the MRP system has also been enthusiastic, especially from the Quantum business analysts. Before the implementation of Categoric Alerts, the analysts would search massive reports for MRP data errors. Now, exceptions are identified as they occur, and analysts have been freed from the drudgery of scanning reports.

Chip maker moving at warp speed to link itself, customers, suppliers

"The technology is in place and we're now moving at warp speed," says Rick DaPrato, manager of the manufacturing systems group for Alpha Industries, a maker of semiconductors in Woburn, Mass.

Three years ago, Alpha was plodding along at a steady \$75 million a year. The company was strangled by a 1980s enterprise resource planning (ERP) system that lacked the flexibility and functionality required to compete in the fast-changing semiconductor market. Today, revenues top \$140 million and are on a pace to double again over the next several years.

Two initiatives put Alpha Industries on this high-growth path. First, the company began an aggressive customer satisfaction program that included realtime customer access to order information. Second, it rebuilt its technical infrastructure on the foundation of Point.Man, an Internet-based extended enterprise applications (EEA) solution from Pivotpoint Inc. of Woburn, Mass.

Pivotpoint defines its EEA solution as a vertically focused ERP package with the ability to integrate value chain partners securely into the core business systems. "It's as if we have all our worldwide sales reps, suppliers, customers and distributors within our four walls," says DaPrato.

The benefits of integrating with value chain partners are impressive, even, at this early stage in the implementation process. "We're a very customer-centric organization," DaPrato says. "Prior to implementing Point.Man, we had an on-

time delivery rate in the 50 to 60 percent range. Now, we're running in the high 90 percent range."

If customers or sales reps have any questions about products, prices or delivery status, they can log onto Alpha's Web site to obtain up-to-the-minute information directly from Alpha's EEA system. Links into the Federal Express system provide immediate delivery status for shipments that have left the factory. Soon, according to DaPrato, the online catalog at Alpha will be personalized to display only the product and pricing information appropriate to that customer.

Time-to-market is a key measure in the semiconductor business. "We use Point.Man's electronic engineering change management approval process," DaPrato says. "Instead of passing paper from desk to desk, it's all done electronically." The result is faster changes, less expense and improved customer service.

Internally, Alpha has seen inventory turns rise, inventory levels drop and financial closes accelerate. . . all without a single on-staff programmer. "I don't want to have programmers keeping bolt-on systems in sync," says DaPrato. "That's why we look to our partner to provide the complete system we need to run our business."

Summing up, DaPrato says, "The need for speed in this market has reduced our three-year vision to a one-year execution plan. Changes are happening in this market faster than we could ever have anticipated."

national Business Systems, Industri-Matematik International Corp. and Manugistics, says Larry Lapide, vice president and service director of supply chain strategies for AMR.

Expected to grow 48 percent over the next five years, the SCM market will reach \$18.6 billion by 2003—up from \$2.6 billion in 1998. Lapide expects SCM software to become more

pervasive as Web-enabled functionality as well as customer-facing capabilities spur increased interest among users. In addition, concerns about Y2K issues will recede as ERP suppliers like SAP release their own SCM software.

Overall SCM revenue growth dipped from 56 percent in 1997 to 46 percent last year, largely because IT expenditures on business applications slowed as they implemented systems to prepare for Y2K. Many also waited to assess SCM offerings from ERP vendors. AMR expects the market to pick up again in the second half of next year, as companies complete Y2K projects and ERP vendors strengthen their SCM offerings. At its recent Sapphire user conference, for example, SAP announced that its mySAP.com strategy will appear by year-end. The concept of mySAP.com is to make integration easier by bundling R/3 with applications for operations such as supply chain planning.

In fact, says Lapide, the same reasons that inhibit the market will help grow it. ERP vendors' SCM products will take some business from the best-of-breed vendors, but they will also help legitimize the market and create more business, he says.

AMR splits SCM into two segments: execution and planning. Supply chain planning vendors accounted for some \$1.1 billion in revenues in 1998, while supply chain execution vendors contributed \$1.5 billion. The market includes revenues from application software maintenance and licenses, hardware, implementation, services, training, consulting, custom development and systems integration.

Emily Kay writes about technology as a principal with Choice Communications, an editorial consulting firm in Chelmsford, Mass.

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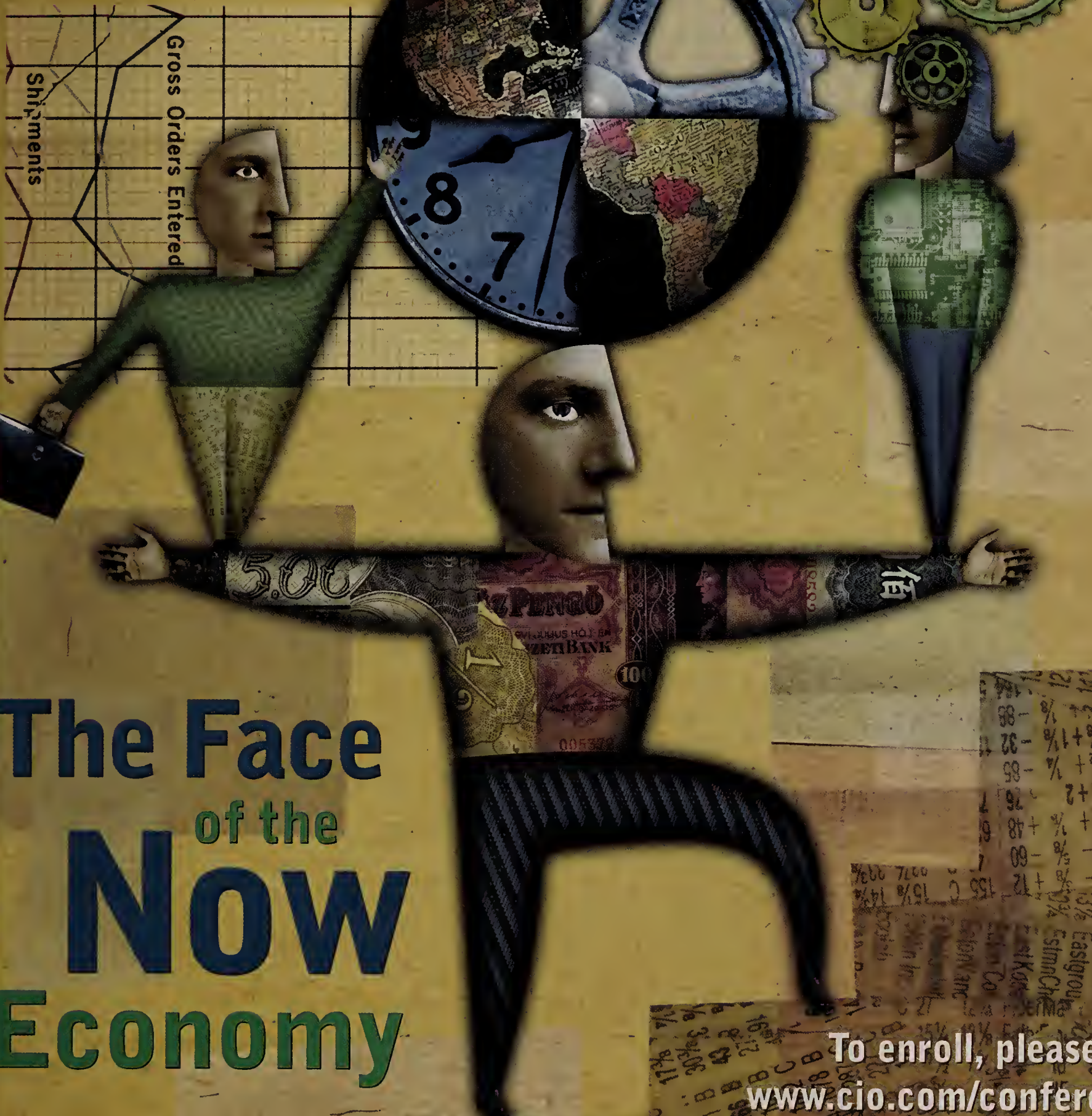
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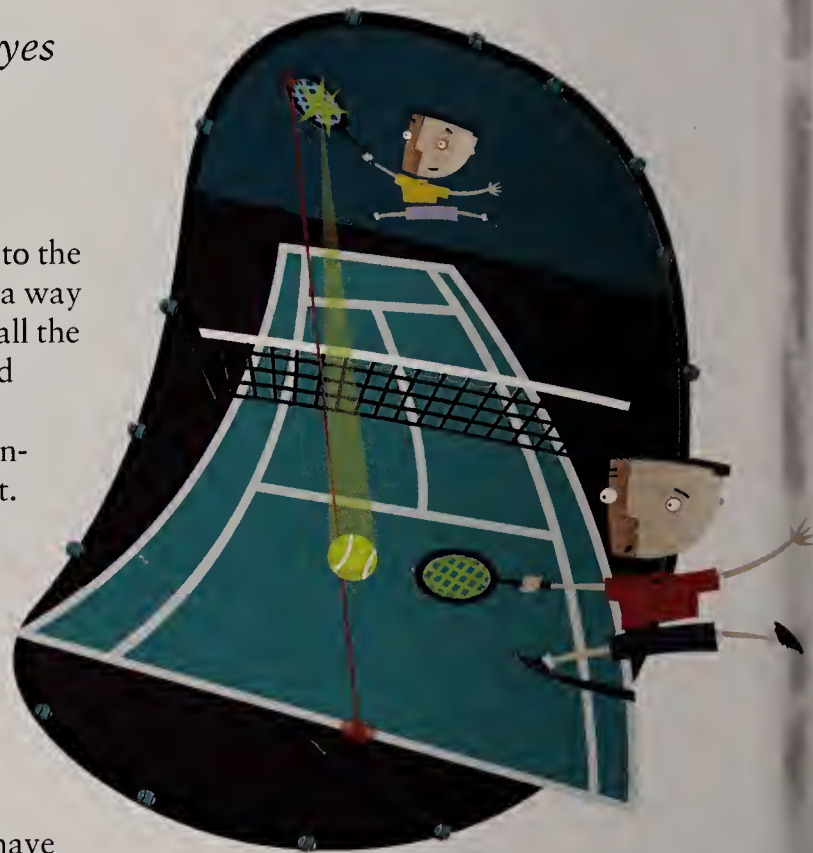
Edited by Katherine Noyes

(Laser) Tennis, Anyone?

ELECTRONIC GAMES Finding it a little too difficult to make it out to the tennis courts on a regular basis? Tiger Electronics Ltd. has found a way for you to keep those skills sharp in your own living room. This fall the company, based in Vernon Hills, Ill., introduced Laser Tennis, and already it's on its way to becoming a smash hit.

The tabletop game, which measures 40 inches by 20 inches, consists of a plastic "court" with a domelike device mounted above it. The device emits a "ball" of super bright LED light. Players use paddles with reflective tape to hit the ball back and forth, following the same rules as in regular tennis. An electronic announcer keeps track of the game, which is geared toward anyone over age seven. Laser Tennis offers four levels of play, but at any level the ball speeds up or curves if the players haven't missed in a while.

The game sells for \$39.99, is made for one or two players and requires no expensive Nikes. And the best part is that you never have to reserve a court. For more information, visit www.tigertoys.com or call 800 844-3733. ■



A Team Style Guide

BOOK EXCERPT More aggravating than working with someone whose personal style differs from yours is the knowledge that that person is really good at what he does. As project teams become more common in companies, collisions of techniques do too. One way to conquer these problems is to understand them better.

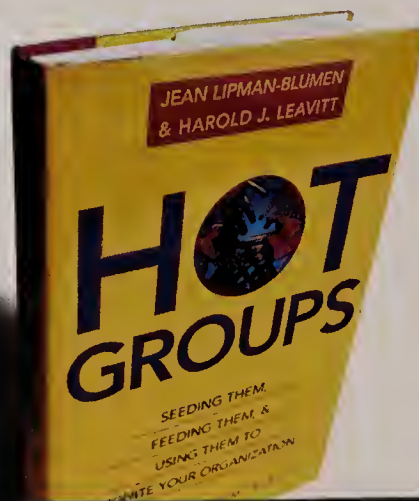
On Page 72 of this issue (see "Jammin'"), we've excerpted a chapter from *Hot Groups: Seeding Them, Feeding Them and Using Them to Ignite Your Organization* (Oxford University Press, 1999, \$25) by Jean Lipman-Blumen and Harold J. Leavitt, a book about inspiring innovation among any group of workers. Following is a brief excerpt in which the authors clarify various work styles so that you can recognize and channel them toward the common goal.

Achieving styles are those learned, habitual behaviors individuals call on when they want to get something done. These nine types of styles show how and why diversity among members' styles is important in a hot group—and why hot groups can exploit such diversity better than many other groups. The nine achieving styles are divided into three general categories made up of three styles each: direct, instrumental and relational.

People who prefer direct styles attack their assignments directly, head-on, without using intermediaries.

They are particularly focused on their own tasks. These are the three subsets of direct styles:

1. **Intrinsic direct people** measure their accomplishments against their own internal standards of excellence. They don't worry about how well others have done. They don't care about winning, just about doing the best they can do—doing better than they have ever done.
2. **Competitive direct people**, in contrast to intrinsics, use an external rather than an internal standard of excellence.
3. **Power direct users**. Power users are good at coordinating complex, rapidly changing events. People who operate in the



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second category, the instrumental styles, prefer to use themselves and everyone and everything around them as instruments to help them get their tasks done. They are tuned in to groups and systems, and they are very savvy about matters political. The three instrumental styles are:

1. **Personal instrumental types** attract helpers by making themselves and their purposes very attractive to whatever helpers they need.
2. **Social instrumental types** know just whom to call to help them find this special widget or that key specialist.
3. **Entrusting instrumental users** emphatically do not micromanage.

The third and final set of achieving styles, the relational set, comprises behaviors that contribute actively or passively to other people's or group tasks. These are three rather familiar styles:

1. **Collaborative relational people** prefer to work in groups but also expect their fair portion of the rewards for the group's success and the punishments for its failure.
2. **Contributory relational people** are happy to work as second bananas, behind the scenes, contributing to the successes of others.
3. **Vicarious relational achievers** take real pleasure in others' success. Not surprisingly, they make great facilitators and mentors. ■



"More young Americans believe that Elvis is alive than believe they'll see a Social Security check."

—U.S. Sen. John McCain, speaking at the August 1999 CIO-100 Conference in San Diego

Y2K COUNTDOWN

1 MONTH & COUNTING

Y2K and the Super Bowl

BACK IN FEBRUARY, WHEN THE NFL PUT TOGETHER this year's schedule, it asked each team if there was any Y2K-related reason why a game should not be played at its particular venue on Jan. 2, which happened to be the last week of the 1999 regular season. Nobody raised their hand. So the NFL scheduled week 17 the way it normally does, matching up rivals for games with marquee value. As usual, the hot ticket will be on ABC's *Monday Night Football*. That's why the San Francisco 49ers will be playing their NFC West rivals, the Atlanta Falcons, in the Georgia Dome Monday, Jan. 3, in a rematch of one of last season's NFC divisional playoff games.

What's wrong with this picture?

If you're a 49ers fan like me, plenty. According to Jodi Balsam, the NFL's counsel for operations and litigation based in New York City, the league has instructed visiting teams to fly Friday, Dec. 31, instead of Saturday, Jan. 1, to avoid potential Y2K-related travel problems. The exceptions are the newly re-inaugurated Cleveland Browns, which have a bye, and the 49ers, which can fly to Atlanta Sunday, Jan. 2, for the Monday night game. As it turns out, this is the second-longest distance any team will have to travel that weekend (2,480 miles, second only to the 2,840 miles the Seattle Seahawks will travel to play the New York Jets).

Here's a concern, though: What if there's more than 24 hours of air-transport chaos and the 49ers can't get out of San Francisco International Airport on Sunday? Certainly, there are two other international airports in the Bay Area, and conceivably the team could fly Monday morning. But that could diminish their practice time and adversely affect their stamina. Even worse, what if the 49ers can't make it to Atlanta at all? Do they forfeit the game? What happens then? Suddenly, Y2K has the potential to affect not only the outcome of the game but also the NFC West rankings and home-field advantage during the entire postseason! (Then again, at the rate Atlanta is going, it may not be such a big deal.)

Of course, if you're a fan of some other team, you may be worrying not about the 49ers but rather how your team is going to get home that weekend. According to Balsam, it's up to the teams to determine contingency transportation. Thankfully, half of the teams have less than 1,000 miles to travel. And since that weekend is the end of the season, only eight teams will be playing the following weekend. There's no telling now which is going to be the home team and which will be the visitors for wild-card weekend. If those rankings depend on the outcome of the Atlanta game, those teams will have just four days to get where they need to go.

—Howard Baldwin



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Just Passing By

Engineers may be at a premium in Silicon Valley, but apparently not everywhere. At this Chevy's Mexican restaurant in Sunnyvale, Calif., custom application development comes really cheap, and you can even get tortilla chips on the side.



Who Needs Vulcans?

DECISION SUPPORT As the leader at the helm of your company's IT department, have you ever wished for a "bridge" similar to the one enjoyed by Captain Kirk on *Star Trek*? It was really the ideal decision-making command center, equipped with sources of seemingly perfect internal and external information, a staff of experts to help interpret it and, of course, a comfy chair.

Well, it may lack the chair, but a new Web-based deci-

sion-making tool from NetBalance Inc. is a sort of online equivalent. Specifically, the CIO Portal offers a single, integrated point of access to the myriad internal and external information resources CIOs need to perform their jobs.

Using Java-based universal agents, the CIO Portal integrates operational and financial data from disparate enterprise systems such as inventory, network management and ERP, and presents it to the user via a fully customizable interface. In addition to presenting the information, the product also provides tools to help analyze and understand it. The CIO Decision Center, for example, offers decision-support techniques such as ad hoc reporting and analytics, what-if analysis, benchmarks, charting and graphing; the CIO Operations Center provides workflow-oriented applications to help manage deployments, procurements, resources and processes; the CIO

Infrastructure Center offers hyperlink access to IT infrastructure management applications such as Computer Associates' Unicenter TNG, IBM/Tivoli TME and NetBalance's own IT Ledger suite; the CIO Business Center provides integrated e-mail and fax communications; and the CIO Knowledge Center contains a repository of internal and external

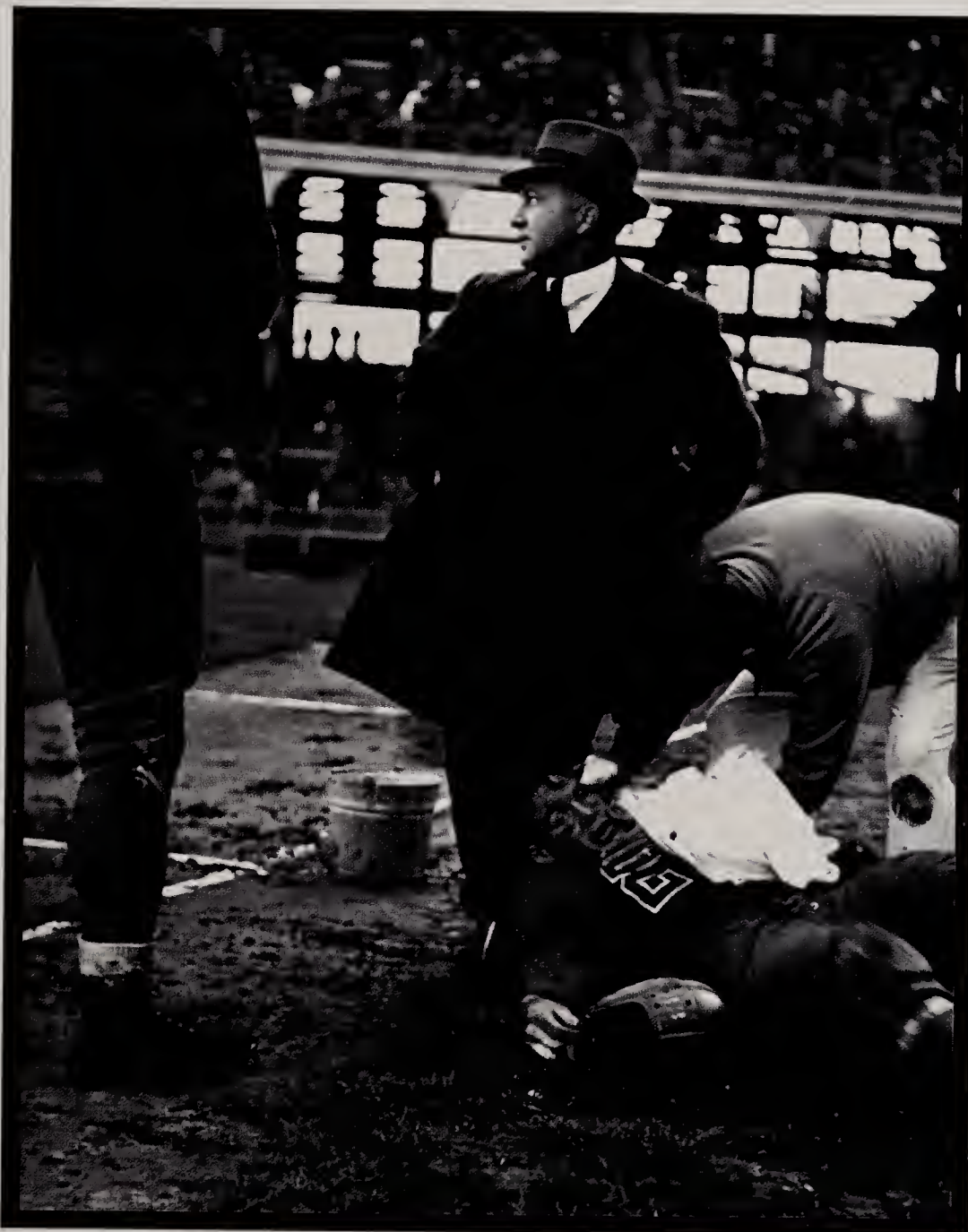


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The result? According to NetBalance, IT executives can then make better operational and financial decisions.

"Everyone recognizes that IT is becoming increasingly strategic, complex and expensive—which means that it is also becoming increasingly risky," says Raj Ananthanpillai, president and CEO of NetBalance in Gaithersburg, Md. "CIO Portal offers the scalability of a corporate intranet with capabilities that bring IT into alignment with the rest of the organization."

The CIO Portal's pricing begins at \$150,000 for a 10-user license. For more information, visit www.netbalance.com. ■

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Findings Career Choices

Next Best Options

What would you be doing right now if you weren't an IT executive? Chances are your answer includes such activities as balancing budgets and analyzing your enterprise's bottom line, because one in five CIOs polled in a

recent survey named accounting and finance as their default career choice had IT not been an option.

The survey was conducted by an independent research firm for RHI Consulting, an outsourcing firm based in Menlo Park, Calif. It prompted responses from approximately 1,400 CIO-level IT executives in a random sampling of U.S. companies with more than 100 employees. The executives were asked, "If you had not chosen a career in technology, which field would you have been most likely to pursue?"

Two hundred or so of those surveyed left that question blank; but

among those who did respond, the top three alternate career choices named were accounting and finance, listed by 21 percent; teaching, named by 15 percent; and engineering, cited by 11 percent. (See "Fiscal Tendencies," above, for other results.) In the "other" category, consisting of career choices mentioned each by fewer than 3 percent of respondents, were such diverse fields as music, transportation, politics and broadcasting.

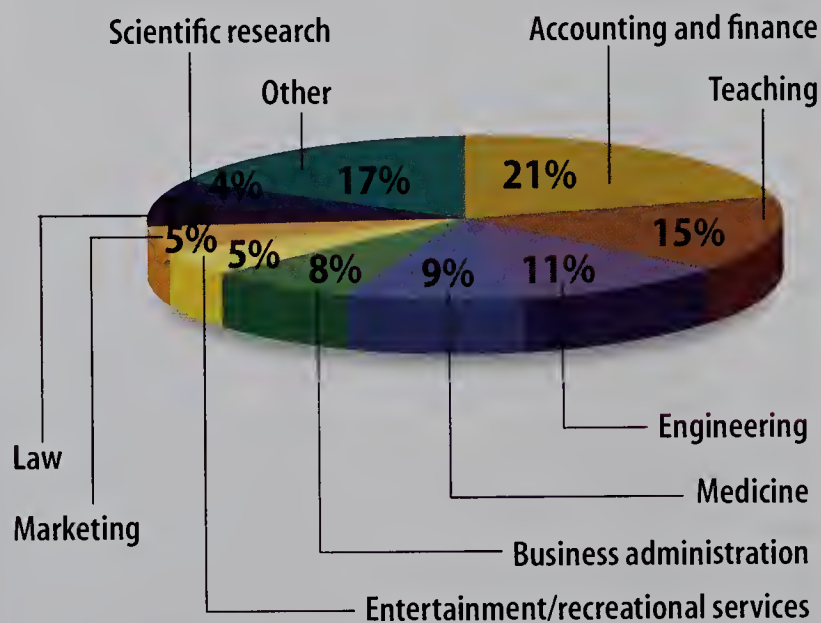
Both finance and IT positions demand math aptitude, problem-solving abilities and strong analytical skills, notes Greg Scileppi, RHI executive director, to explain the strong attraction of IT executives to the top second career choice. As for teaching, he points out that, increasingly, training is an important part of an IT executive's repertoire. "Technology initiatives frequently require the ability to communicate complex concepts in nontechnical terms, a quality associated with effective teaching," he says.

There's more on RHI surveys at the company's Web site, www.rhic.com.

—David Pearson

Fiscal Tendencies

Among 1,200 respondents, accounting and finance is top alternate career choice



SOURCE: RHI CONSULTING

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Think Tank *Edited By Elaine M. Cummings*

MAKING THE MOST OF AN INFORMATION-RICH ENVIRONMENT

Knowledge Management, Round Two

The good news is that the knowledge management movement is more than the fad some had predicted. The question now is, Where is it headed?

BY TOM DAVENPORT

AS COMPANIES CONTINUE to initiate new knowledge management projects, new knowledge manager jobs continue to be advertised, and virtually every major software vendor (including IBM and Microsoft) continues to offer and advertise knowledge management technologies. Knowledge management is headed toward becoming a permanent fixture in the business landscape.

So if it's going to be around for a while, it might be useful to think about what the next wave of knowledge management will be. But first I'd like to describe what I think the first round was all about. That way, if you don't find my thoughts credible, you can simply skip to another article about message-oriented middleware or whatever.

In Round One, companies managed their knowledge assets in the same way they managed their physical assets: Capture the asset and put it in one place so that it can be easily accessed. For physical goods, the storage point was the warehouse; for the

intellectual equivalent, it was the knowledge repository.

Today, in many companies, the knowledge warehouse is full. In fact, one company I know has more than 3,600 databases and millions of "knowledge objects." Its shelves are overflowing, and seekers of knowledge are having a difficult time finding what they need.

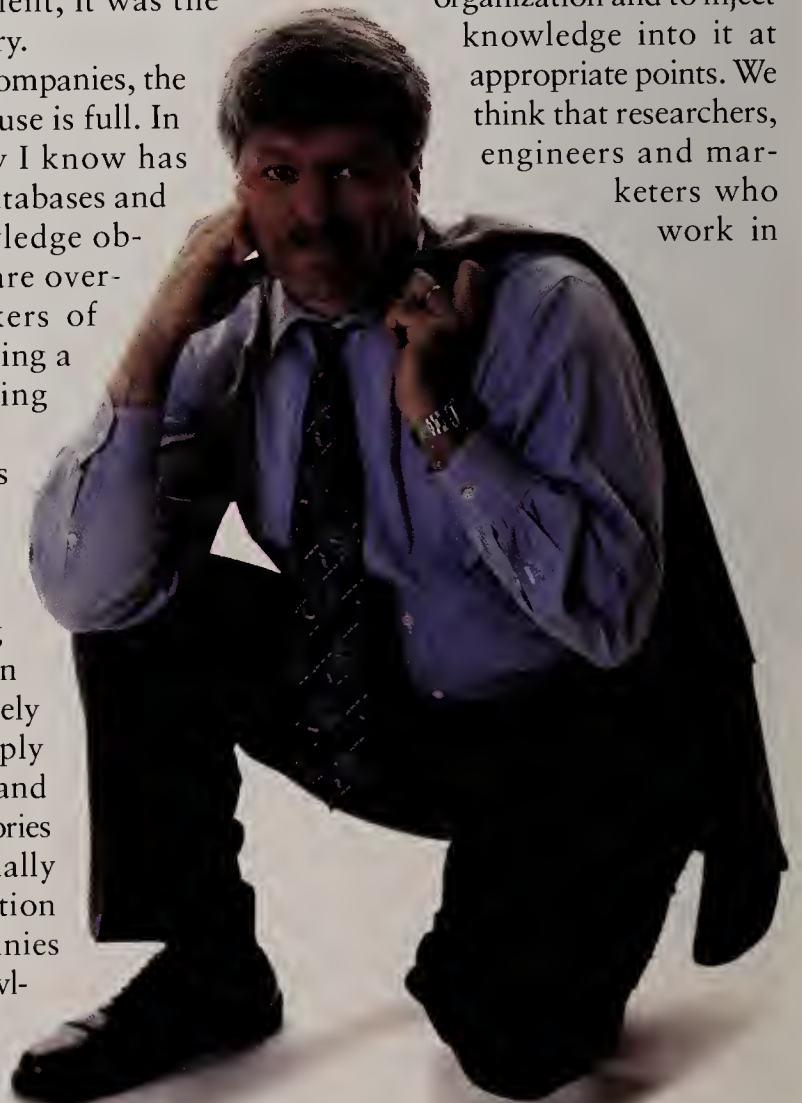
When companies realized they had too many physical assets in the warehouse, they began thinking about supply chain management or closely matching the supply of goods with demand and reducing inventories to what was actually needed for production processes. Companies that warehouse knowledge are beginning to need the equivalent of

supply chain management. I'm pretty confident about that one.

So what, in Round Two of knowledge management, will companies do when they realize they have too many knowledge assets in the warehouse? It's a question that raises two concerns. The first is about the second round of knowledge management (whereas my second concern is about the first round.)

Those who have followed my intellectual interests closely (Hi Mom!) won't be surprised to hear that the answer involves knowledge work process improvement. If we're going to fit the supply of knowledge to the demand for it, we need to start tinkering with how knowledge workers do their jobs. Let's assume, for example, that our objective is to improve the performance of the new-product development process within the

organization and to inject knowledge into it at appropriate points. We think that researchers, engineers and marketers who work in



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the process should capture more of what they learn, share the knowledge they gain with other new product development teams, and use internally and externally derived knowledge more effectively to avoid mistakes and employ best marketing practices. Seems simple enough, yes?

In KM Round One, we would have built a Web or Notes repository for marketing information and instructed the new product developers to go at it. If it were possible to do Round One again, we'd do the same thing, except we'd call it the "New-Product Development Portal."

The problem with Round Two is that the people who develop new products probably already have demanding jobs. Asking them to record the lessons they've learned during a hard day's work, or to spend extra time searching through an extensive repository before undertaking an important task, is unlikely to meet with a great deal of success. Instead, knowledge management has to be "baked into" the job. It's got to be part of the fabric of the work to import knowledge when it's needed and export it to the rest of the organization when it's created or acquired.

But the only way that knowledge activities will be part of the fabric of the job is to design the job from scratch, putting knowledge in and taking out activities that are no longer as critical. The tricky thing, however, is that knowledge workers don't really like other people telling them how to do their jobs. Autonomy is a key objective of many knowledge workers; it's one of the main reasons they work so hard to become one. So redesigning knowledge work can't be like reengineering—top down doesn't cut it. Come to think of it, totally top-down reengineering probably doesn't work very well for any kind of job.

Avoid Snap Judgments

There are a couple of ways to give knowledge workers more confidence in the results of a job redesign. The most important thing is to have them participate in the design process. Of course, that's a bit difficult if you are working on processes performed by thousands of work-

ers. But regardless of the number, you'd better have a very strong representation by the people who actually do the work on your redesign task force (or whatever you want to call it).

You may feel that such representation will limit the degree of change you can bring about in the new process. You're probably right, but you have to live with it. If all your targeted knowledge workers resign because they don't like the new

Knowledge management has to be "baked into" the job. It's got to be part of the fabric of the work.

way you want them to work, the CEO will probably be peeved. At you.

The second way to build trust among knowledge workers and show them that you really understand their jobs is to have the process analysts actually hang out with the workers in question. As you no doubt remember perfectly from a column I wrote three years ago in *CIO* on the rise of corporate anthropology (take it off the wall of your office and reread it now, please), studying a culture while living in it is called ethnography. It means analysts sitting next to workers, going to their meetings, getting to know them and their problems, even videotaping their work steps for later study.

That fraternization prevents the analysts from coming to any snap judgments about the process that would not fit with the skills, backgrounds or preferences of the knowledge workers. Again you may be asking, "Why should they have to like their jobs?" The answer is that, if they don't like their jobs, they walk. And replacing knowledge workers today is as hard as pitching to McGwire and Sosa.

Find Key Workers

Now you can't redesign every knowledge job in your organization. So which ones should you go after first? I've found that there are usually one or two key knowledge jobs in an organization that are the focal point of any attempt to use knowledge more effectively. If the work-

ers in this key job create, use or share knowledge, the rest of the organization will benefit greatly.

At a semiconductor equipment company, for example, it was obvious that if the project managers who led the development of new models wrote down or otherwise shared what they learned with other project managers, the overall process would improve at a rapid rate.

It was also apparent that the incumbents of the job spent most of their time fighting fires, had little interest in sharing or using stored knowledge, and had no process orientation at all. It would certainly be a challenge to redesign their jobs, but it was easier than redesigning a lot of different jobs, and the status quo

was no picnic, either.

So what did the company do? Last I heard, they had continued to wimp out and leave the project managers alone. It's not the first time a client has ignored my consulting insights, and it won't be the last.

Those of you who are still paying close attention (how's it going, Dad?) will recall that I said I would address two concerns about knowledge management in this column. While I was quite confident dealing with the first, with the second I have some doubts about the right course of action. What worries me is that knowledge management as a concept grows broader by the day, and I am afraid that it will eventually collapse of its own weight.

Define KM Concepts

Knowledge management started in most companies as the creation and use of electronic repositories, with a healthy dose of human issues like having a knowledge-oriented culture and structure. Since then, however, it has grown amoebalike to swallow a variety of other topics. Organizational learning, for example, is increasingly being drawn into the KM fold, as are other variations on the learning theme (distance learning, performance support and so on). Business intelligence, which I define as the art of turning data into knowledge, is now often discussed as a branch of knowledge management.

Competitive intelligence is moving in the same direction.

Is it a problem that knowledge management is an ever-growing collection of stuff? One positive side of the agglomeration is that all of the different components do have something in common, that is, a goal of using knowledge to achieve some business objective, the combination of human and technological enablers of change, and a focus on capturing and disseminating knowledge. With all these shared ideas, perhaps knowledge management is a perfectly acceptable label for the "umbrella" that covers all the concepts.

But the drift and accretion of knowledge management surely has a downside. In referring to so many different ideas, the concept will probably lose focus, and knowledge management initiatives may try to do too much. As hap-

pened with business-process reengineering, expectations may get too high about what can be accomplished through the wonders of KM. Further, the increasing number of knowledge-management-

As happened with business-process reengineering, expectations may get too high about what can be accomplished through the wonders of KM.

related concepts may lead to skepticism and cynicism about the entire undertaking. As one manager related to me several years ago, "Whenever I have a project I want to get funded, I call it 'reengineering.'" We wouldn't want the same thing to happen with knowledge management.

I guess I'm a conceptual conserva-

tive. My recommendation would be to try to keep some of these knowledge-related ideas separate from each other, each with its own identity. It might even be worth creating an official definition of each of these concepts within your organization. If the glossary is accepted, it would greatly ease the process of discussing the topics. Defining knowledge-oriented concepts may seem to be a somewhat academic exercise. But if you're working primarily with knowledge, it makes sense to clarify what different types of knowledge mean. **CIO**

Thomas H. Davenport is a professor of management information systems at Boston University School of Management and director of the Andersen Consulting Institute for Strategic Change. He can be reached via e-mail at thomas.h.davenport@ac.com.

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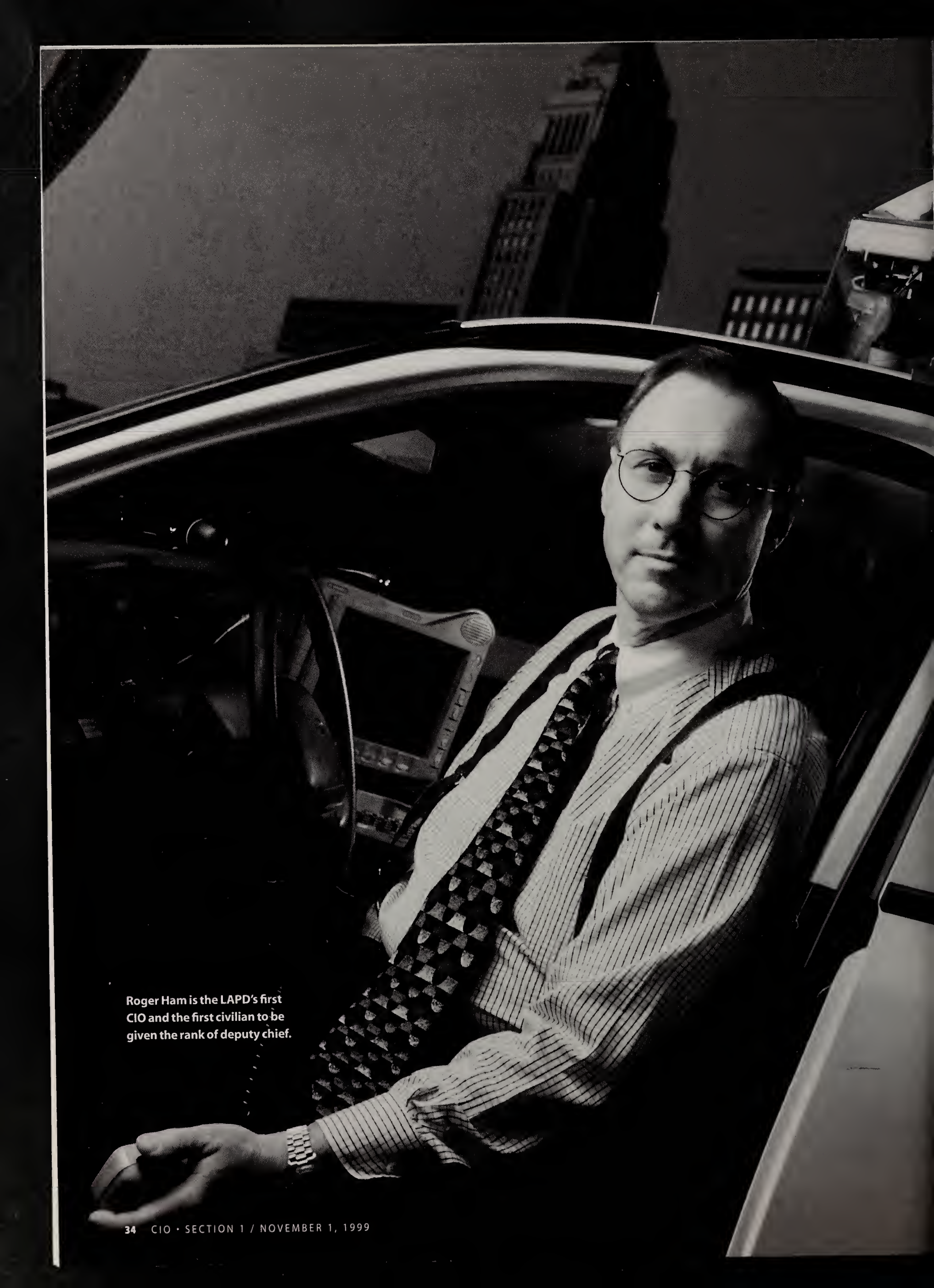
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Roger Ham is the LAPD's first CIO and the first civilian to be given the rank of deputy chief.

PROFILE: ROGER HAM

The LAPD's first-ever CIO is armed with the business and technical know-how to make crime fighters more effective, but can IT help the department's public image?

ON HIS FIRST DAY, A YEAR AGO LAST AUGUST, ROGER HAM'S CITY-ISSUED CAR WAS STOLEN—"misappropriated," actually—by an unidentified colleague who never returned the vehicle. Earlier that same day, upon entering his office suite, Ham discovered he had no personal staff (except for one secretary, who was sitting on boxes), no computer and no access code for his telephone. To phone long distance, Ham had to ask his secretary to place his calls. When he called headquarters to request his own access code, he was told to expect one—in a couple of weeks.

Then Ham inquired about his benefits package and found he wasn't even an LAPD employee yet; somehow his paperwork had been lost. "Don't expect to get paid for at least this month," he was told.

Reader ROI

ROGER HAM HAS JUST COMPLETED his inaugural year as the Los Angeles Police Department's first-ever CIO. Read this story to see how he has already

- ▶ Launched an IT department . turnaround
- ▶ Armed police officers with new tools
- ▶ Overcome political barriers to success

PROFILE: ROGER HAM

Shortly thereafter, Ham delivered his first status report to Chief of Police Bernard Parks, and in it he made light of his misfortune. "It doesn't irk me that someone stole my car and that I have my secretary making phone calls for me," Ham said. "But that I'm not going to get paid for up to three months does, in fact, irk me."

It would be funny if it weren't so sad. Ham couldn't help but wonder, What the heck have I gotten myself into?

Those initial setbacks were only speed bumps compared with the real obstacles he faces. Not only is Ham the LAPD's first-ever CIO, he's also the first civilian brought in as one of eight deputy chiefs reporting to Chief Parks—no easy role in a paramilitary organization whose officers refer to themselves as sworn personnel (because of the oath they take to serve and protect) and typically shun civilians and outsiders.

In his first year, Ham's task was just to get a handle on the LAPD's IT investment. Now he has to maximize that investment to help fulfill the department's mission: reduce crime and the fear of crime in Greater Los Angeles. And he's got to do this in a highly scrutinized department that, while still recovering from Rodney King and O.J. Simpson, has been splashed with charges of corruption over possible framing of suspects. "Over time, I can't make [the LAPD] perfect," Ham shrugs. "But I can make a difference."

"I'm Never Going Back to L.A."

HAM, 50, NEVER INTENDED TO work in law enforcement—or in Los Angeles.

A native of Southern California, Ham earned his bachelor's degree in electrical engineering at California State University, Long Beach, in 1971. His first job out of college was as a project engineer at Mobil Corp., managing computer and communications systems. He loved the work but hated the daily commute into downtown L.A.

After six years at Mobil, Ham learned that the Huntington Beach Police Department needed someone to manage a new automated dispatch system. Here was a chance to move into the public sector and get out of downtown. Ham knew nothing about police work ("I'd seen a little *Dragnet* and a little *Adam-12*"), but

that didn't hurt his candidacy. The police chief told him, "I can train you to be a cop; I can't train a cop to be an engineer."

In 1976 Ham signed on as the Huntington Beach Police Department's communications administrator and information systems manager—essentially the CIO, although he didn't use that title. Settling into the easier pace of "Surf City"—the official nickname of the Orange County community not far from Disneyland—Ham saw himself staying put for maybe five years. He ended up staying 21.

"I enjoyed the ride," Ham says of his tenure in Huntington Beach. "We really changed the way police officers did their jobs in the field." Huntington Beach was one of the first communities anywhere to put mobile data terminals (MDTs) in police cars, and throughout his term Ham managed to fully automate both the police and fire departments' communications, property and records systems. He also led a successful

On the Chief's Radar

Here are the top projects facing the LAPD's top technologist

■ **Proposition M** A \$235 million, voter-approved bond issue to replace the LAPD's current voice radio and mobile data terminal systems with state-of-the-art tools and two new police dispatch centers. The centers—one in downtown L.A. and the other in the San Fernando Valley—will double the department's capacity to handle emergency calls.

■ **Field data capture** A project aimed at creating a paperless crime-reporting system. New mobile data terminals are currently being issued to field officers, allowing them to gather investigation data and prepare reports in the field in real-time.

■ **LAPD online** The LAPD has created a 2,200-page Web site that allows the public easy access to crime statistics,

contact information and answers to frequently asked questions.

■ **Data architecture strategy** The LAPD contracted Sierra Systems Consultants to reengineer the department's IT architecture and draft a new data architecture plan.

■ **Detective case tracking system** A new project to help detectives track and manage their cases in a citywide basis, sharing information with other detectives who may be pursuing similar suspects or cases.

■ **Nonemergency number** As part of the communications system upgrade, the LAPD is creating a new nonemergency number (877-ASK-LAPD) to reduce the strain on 911.

—T. Field

effort to integrate emergency communications systems for 31 communities within Orange County—at a time when the county was facing bankruptcy and funds were scarce.

Yet, by 1988, Ham was restless. "Been there, done that" had occurred to me a number of times," he says. He enrolled in an MBA program at the University of Southern California, fully expecting a return to private industry. "I knew technology was my strong suit, but I wanted to learn how to use technology to affect the bottom line of a corporation," Ham says. "I wanted to be in a bigger pond."

Little did he know that his opportunity would come from the big, bad pond he'd left behind.

"We Need a CIO"

THE LAPD HAS SPENT MOST OF the '90s on the wrong side of public opinion. From 1991 to 1996, the department was stung by a series of public

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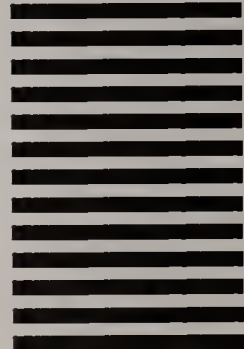
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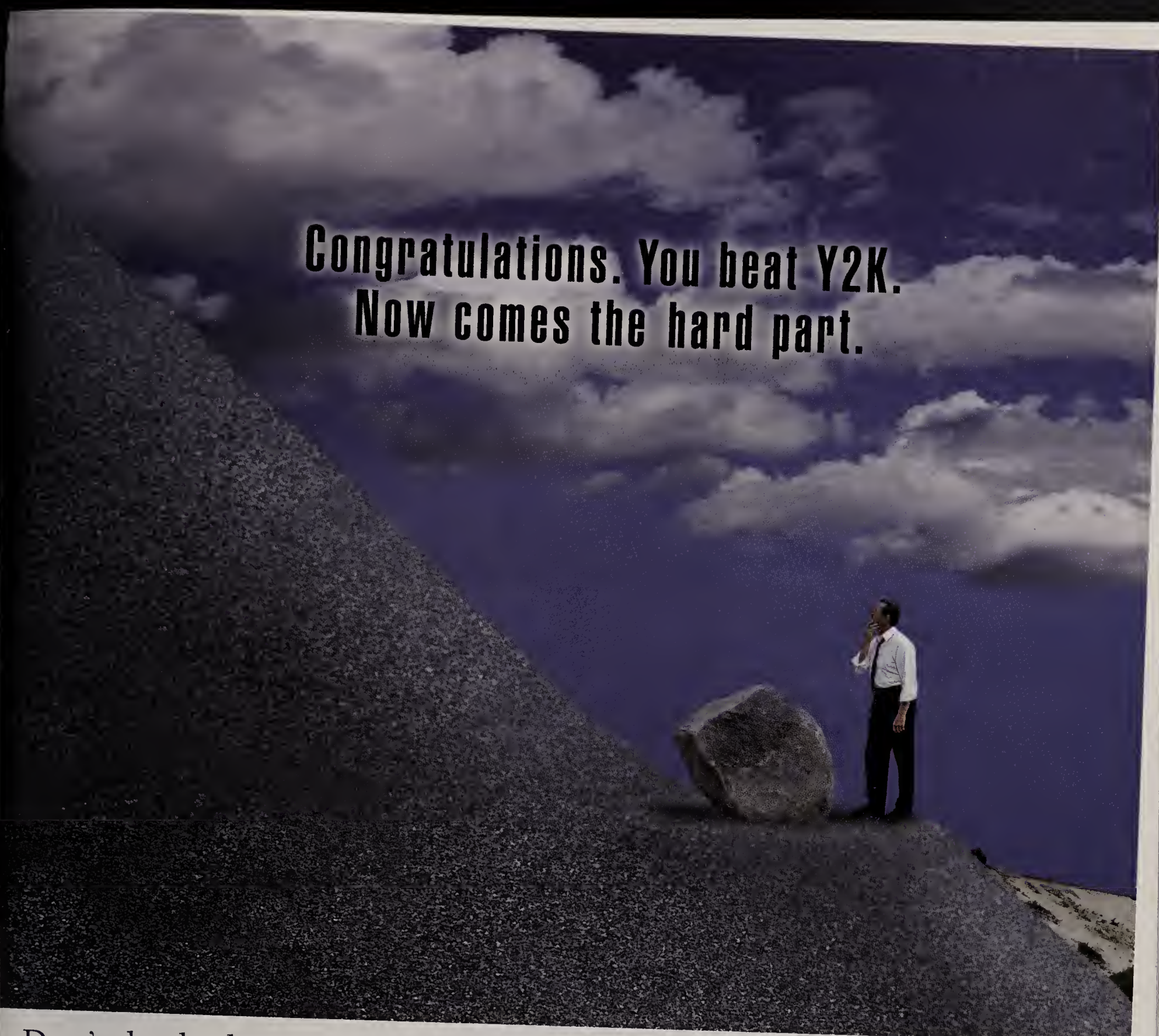
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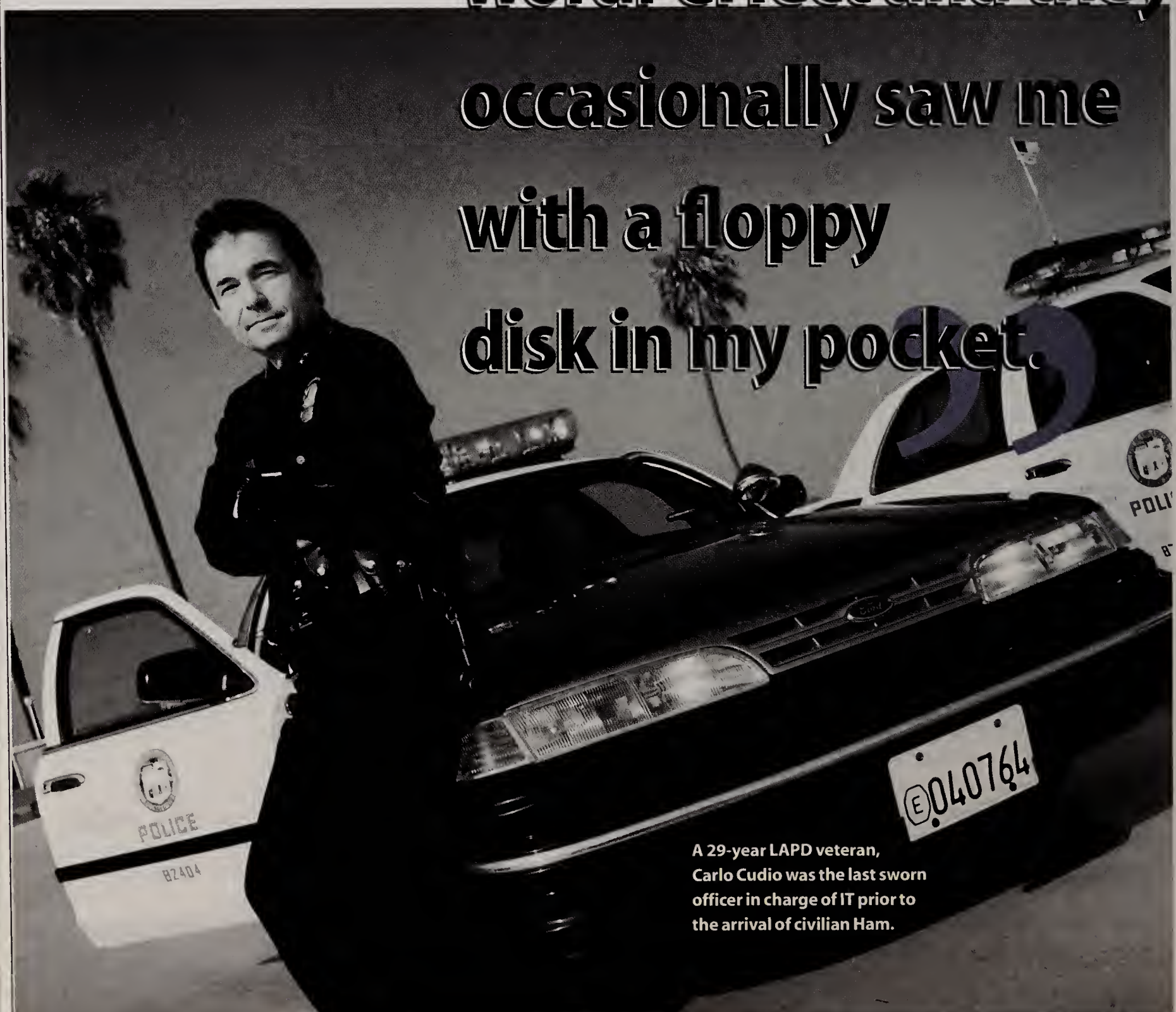
embarrassments that began with the Rodney King battering case, peaked with the questions raised in the O.J. Simpson trials and in between saw the messy transition from longtime police chief Daryl Gates to his ill-fated successor, Willie Williams. When Chief Parks took command in August 1997, the LAPD was longing for leadership. (As we were researching this story, the latest charges of corruption arose, and it was too soon to say who might ultimately be held responsible for this mess.)

Amidst the LAPD's chaos, the IT organization was equally chaotic. Part of the problem was that, up until then, there had been no single IT organization. IT resources were spread throughout the department, with one branch overseeing communications projects, another in charge of LANs and desktops, and yet

another in charge of mainframes and databases. Troy Hart, an LAPD veteran with 20 years' sworn and 15 years' civilian experience, headed the former Information Resources Division (which merged with the Systems Development Task Force to form the IT department,

also headed by Hart). It was like being half of a two-headed beast, he says, adding, "We were married in intent, but divorced in paths of delivery." Both groups, for example, recognized that police officers needed better information systems out on the streets. But while

**“People thought I was
a guru because I knew
WordPerfect and they
occasionally saw me
with a floppy
disk in my pocket.”**



A 29-year LAPD veteran, Carlo Cudio was the last sworn officer in charge of IT prior to the arrival of civilian Ham.

Hart's group, the Information Resources Division, was lobbying for laptops, another team leader was lobbying to upgrade the MDTs in the squad cars. (The two projects are now married and working in parallel.)

Partially in response to the crises of the early '90s, L.A. city leaders determined that better information systems were the key to providing more efficient and effective law enforcement, so they freed up millions of dollars for IT projects. Mayor Richard Riordan raised \$15 million in donations aimed at jump-starting the LAPD's IT modernization, and voters in 1992 approved a \$235 million bond to upgrade communications systems and build two new police dispatch centers.

But there remained a huge problem: IT leadership. Although the LAPD hired many civilians to staff IT positions, management roles traditionally went to sworn officers who lacked not only IT skills but also the desire to stick around and acquire them. Police officers, after all, wanted to do police work, not man-

age computer systems. IT management tended to be a position that sworn officers rotated in and out of quickly.

Carlo Cudio, a 29-year LAPD veteran, was the last sworn officer in charge of IT prior to Ham's arrival, and he readily acknowledges his discomfort with the role. "People thought I was a guru because I knew WordPerfect and they occasionally saw me with a floppy disk in my pocket," says Cudio, who was appointed to the job in 1995 by then-chief Williams. Yet Cudio was hardly a technology whiz, and he had no interest in ending his career behind an IT department desk. "I always saw my role as maintenance until a real CIO got here," Cudio says.

Relief came to the LAPD with the arrival of Chief Parks. A 34-year police veteran, Parks had managed communications as deputy chief, and he'd developed an appreciation for what IT could do for law enforcement. One of his first acts was to reorganize the entire LAPD, streamlining administration and charter-

ing a new, all-encompassing Information and Communications Services Bureau. To head the new ICSB, Parks created a new deputy chief position for a civilian CIO—one who would have the responsibility and the authority to move the LAPD forward.

But creating the position was one thing; filling it was quite another.

"It Was Like a Major Fire Drill"

IT WAS AN OFFER THAT HAM COULD easily refuse. Contacted in early 1998 by LAPD officials who knew his work in Huntington Beach and wanted him to apply for the CIO job, Ham weighed his options. On the plus side, the LAPD had the potential to be a world-class organization in a world-class city, and Parks was trying hard to polish the department's tarnished image. On the downside, the LAPD was riddled with politics, and the civilian CIO would likely face resistance from sworn officers...and the job was based in downtown L.A. Plus, if he was going to make



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LAPD by the Numbers

1,350	mobile data terminals issued
5,400	police incidents daily
6,000	911 calls daily
8,000	nonemergency calls daily
150,000	people arrested by LAPD each year
350,000	crime reports written each year
500,000	citations written annually by LAPD officers
\$100 million	Ham's approximate annual IT budget
\$400 million	total value of current IT projects
\$1.2 billion	LAPD's approximate annual budget

—T. Field

a move, Ham wanted it to be in big business, in senior management at a big-name company like Hewlett-Packard or Motorola.

But the more he thought about it, the more Ham realized that the LAPD represented a once-in-a-lifetime opportunity. If he succeeded, well, then maybe five or so years down the road he'd be even more desirable to one of those big-name companies. That realization clinched Ham's decision. "I knew I'd get respect from [business] people if I had this experience," Ham says.

And what an experience it's been. Ham is continually astounded by the enormity of his job. Foremost is the scope of the work. "Someone pointed out to me early on that here in L.A. we have 18 different police stations as big as the entire Huntington Beach Police Department," Ham says. "Here if something is a problem, it's a big problem."

Ham became a quick study of the LAPD's IT resources. Working six days a week, 12 to 14 hours a day for his first

several months, he assessed the department's immediate needs. "It was like a major fire drill," Ham says. "There were stacks of paperwork, projects, contracts being sent out." And every so often he'd make a weird discovery such as this: The LAPD's four traffic divisions had four different ways of collecting traffic data—with one person printing the data and collating it by hand. "My heart sank many times as I questioned, 'Why are we going in this direction?'"

Among his early initiatives:

Merging resources. Ham combined the Information Resources Division and Systems Development Task Force, creating a new Information Technology Department headed by Troy Hart. Similarly, Ham appointed new heads to his other three subdivisions.

Mending fences. Although long ago funded by voters, the construction of new police dispatch centers had been a political football between the LAPD and city hall, as various parties fought over where they should be located. With the

authority of his high rank, Ham was able to settle the disputes and get the project rolling.

Addressing staff needs. Before Ham's arrival, the LAPD had never outsourced any IT tasks—and consequently was understaffed in almost every office. Ham has paved the way for his managers to explore outsourcing solutions. (For his more current to-do list, see "On the Chief's Radar," Page 36.)

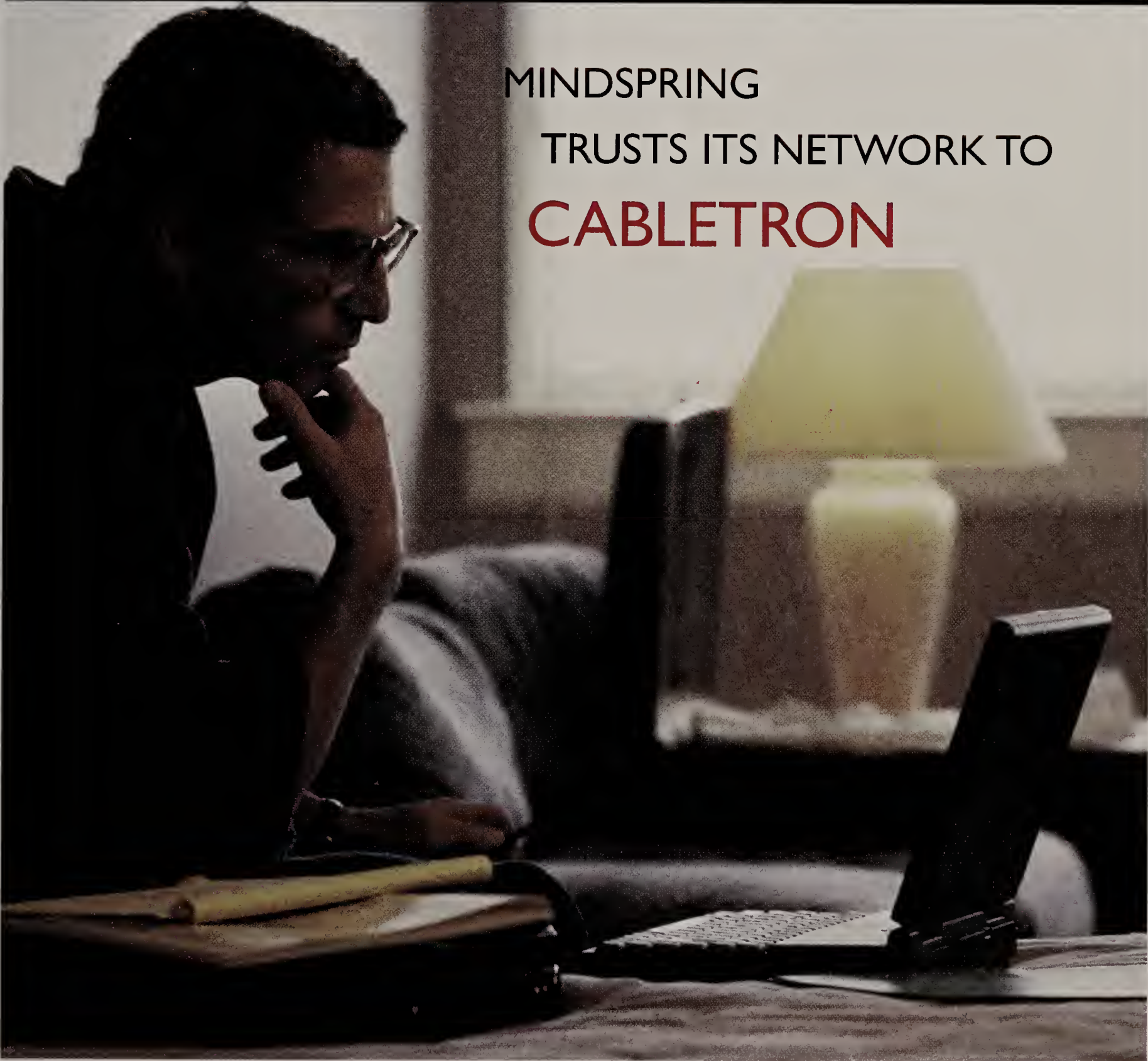
"You're a Chief"

HAM HAS BARELY BEGUN HIS second year on the job, but already he's seen some successes. The official groundbreaking for the construction projects took place Sept. 23, he has a new consolidated data architecture plan in hand, and the first 700 MDTs have been installed in police cars. These MDTs are the first step toward implementing a new field data capture system that will allow officers to enter crime data and write reports in the field, not back in an office. "We have 9,600 police officers on the streets," Ham reasons, "and if I can improve their efficiency just 10 percent, then I've effectively put 1,000 additional officers on the streets." And if officers have more visibility on the streets, police officials hope, then citizens will feel safer and more confident in the LAPD. And at a time when the LAPD is embroiled in yet another scandal, Ham's efforts will be doubly necessary to counterbalance the department's image problems.

The scandal isn't even Ham's first major crisis. One weekend last fall, a fire broke out in the building that housed the LAPD's central 911 system. At the time, Ham was attending a football game with his family, but he was paged to the scene, where he discovered his systems had suffered heavy damage from fire and water. Marshaling his forces—LAPD staff and vendor support troops—Ham directed a massive data and systems recovery that was estimated to take four days, but they finished in 13 hours. "And we never lost a single 911 call," Ham says with pride.

These achievements have done much to build Ham's relationship with the sworn officers, who had every reason to be suspicious of the CIO. After all, he was an outsider, and the last high-ranking outsider in the LAPD was ex-chief Williams,

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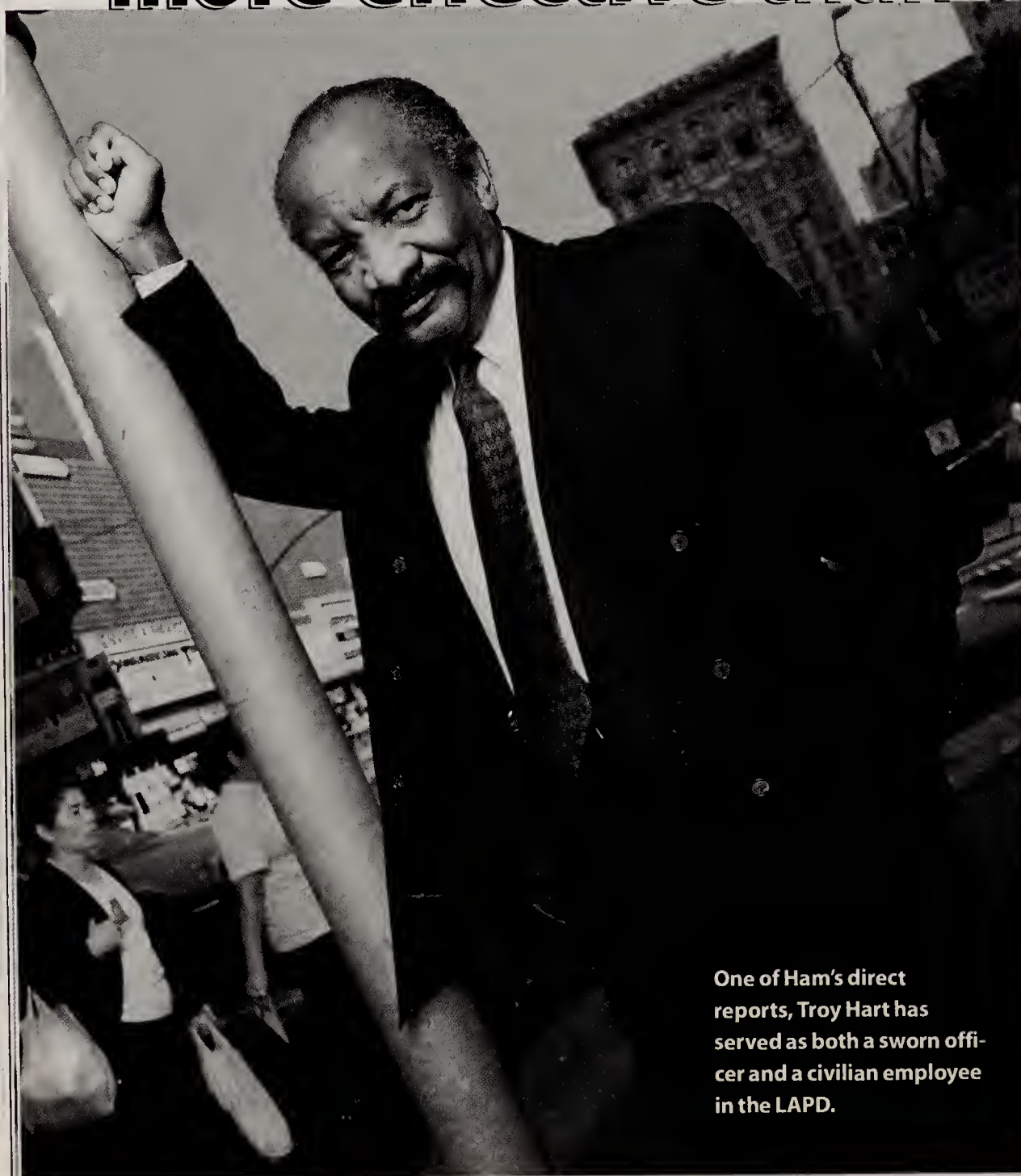


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“Sworn officers are very goal- and task-oriented; they think they’re more effective than we civilians.”



One of Ham's direct reports, Troy Hart has served as both a sworn officer and a civilian employee in the LAPD.

who won few friends in his short term.

Ham thinks the sworn officers cut him some slack because of his high rank, but he's also taken steps to earn their respect. Step one was to immerse himself in police work. This is a trick he picked up back at Huntington Beach, where he even signed up for firearms

training and proved he could shoot as straight as many cops. Ham has been very visible around LAPD, asking questions and absorbing answers. Step two, he's become an effective advocate of the department, representing technology issues (the IT budget, Y2K) before the city council and in the news media.

“Sworn officers are very goal- and task-oriented; they think they’re more effective than we civilians,” says Hart, Ham's direct report who has served as both a sworn officer and a civilian employee in the LAPD. “You need to win over these people by getting them to understand and appreciate competency. [Ham] has passed that test.”

Ham's predecessor, Carlo Cudio, agrees. He's been promoted to deputy chief since Ham's arrival, and now he's happy to be back doing police work at the LAPD's South Bureau, located in the epicenter of the infamous L.A. riots. “Ham has done great,” Cudio says. “He went out and learned the job himself; he didn't need to be baby-sat. He put a lot of hard hours into it, and he's pulled it off.”

But what happens when the current money runs out? “The city council is used to dealing with stars and bars,” says Cudio, who wonders how councilors will respond when a civilian walks in requesting big bucks for, say, a PC replacement cycle. So far, Ham is encouraged by how well he's been received. Not long ago, he attended a city function and ran into Deputy Chief Michael Bostic, head of the department's Valley Bureau operations. In the course of conversation, Ham addressed Bostic as “chief.”

“You don't call me chief,” Bostic responded. “You're a deputy chief too; you call me Mike.”

“Ah, but I'm not really a deputy chief,” Ham said. “I'm a civilian.”

“No, no,” Bostic said. “In your job you do all the stuff the rest of us can only dream of knowing how to do. You're a chief.” **CIO**

Senior Editor Tom Field may be reached at tfield@cio.com.

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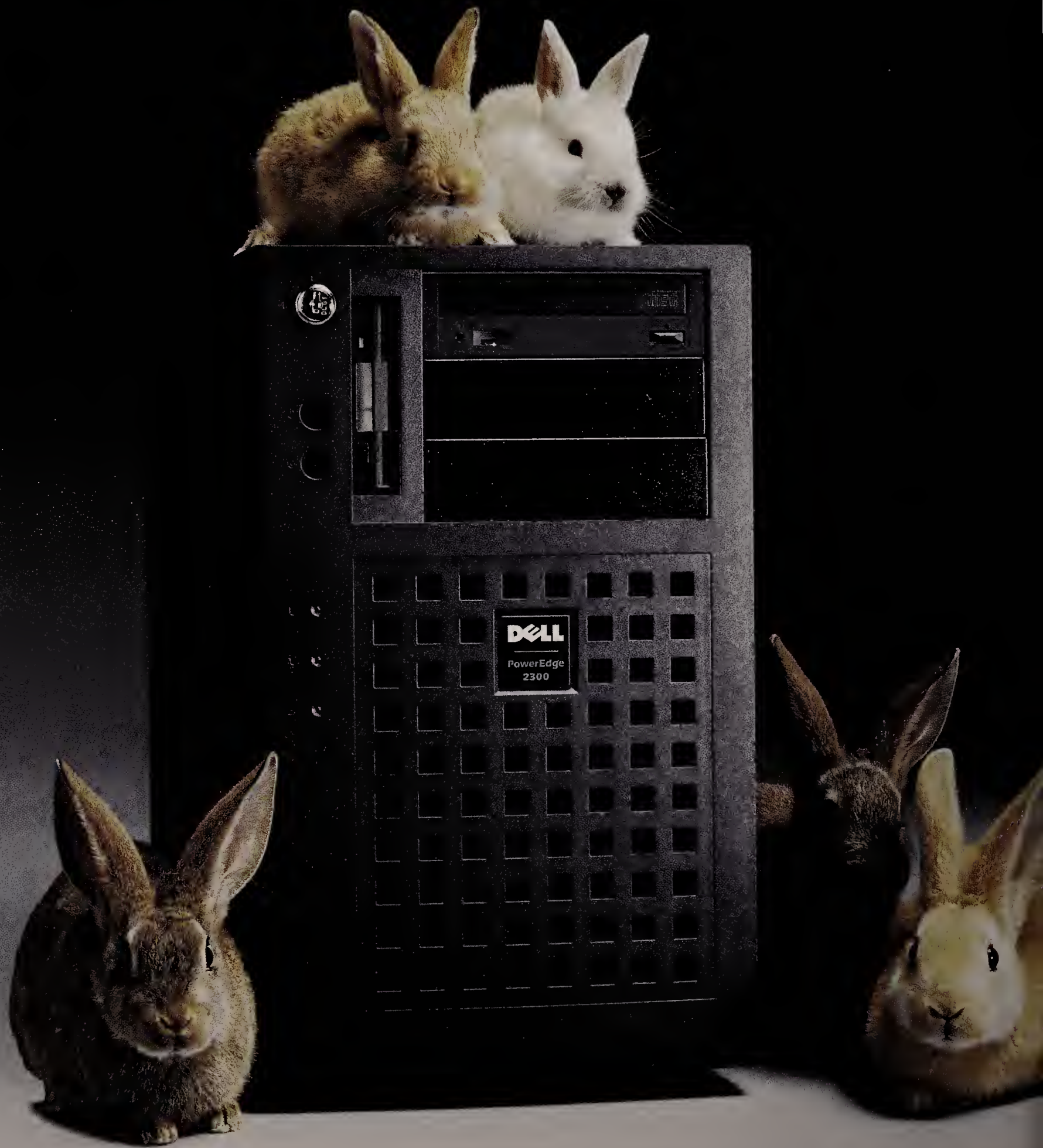
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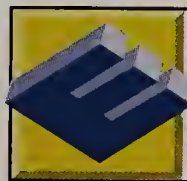
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Get Your Creative (Staffing) Juices Flowing

BY LAUREN GIBBONS PAUL

*Tired of always being short on IT workers?
Follow the lead of CIOs who are coping with
the shortage in imaginative ways.*

dON'T EXPECT TO SEE AN END to the IT staffing shortage anytime soon. Recent Meta Group Inc. figures place the number of open IT jobs at 400,000 this year (up from 180,000 in 1997)—a crisis that promises to endure long after Y2K has come and gone. According to Meta, the demand for IT services is growing at 25 percent per year.

To get around the shortage, most CIOs are well-versed in Staff Development 101: Focus on retention, hire from within, load up on training opportunities. But beyond the usual parameters lie

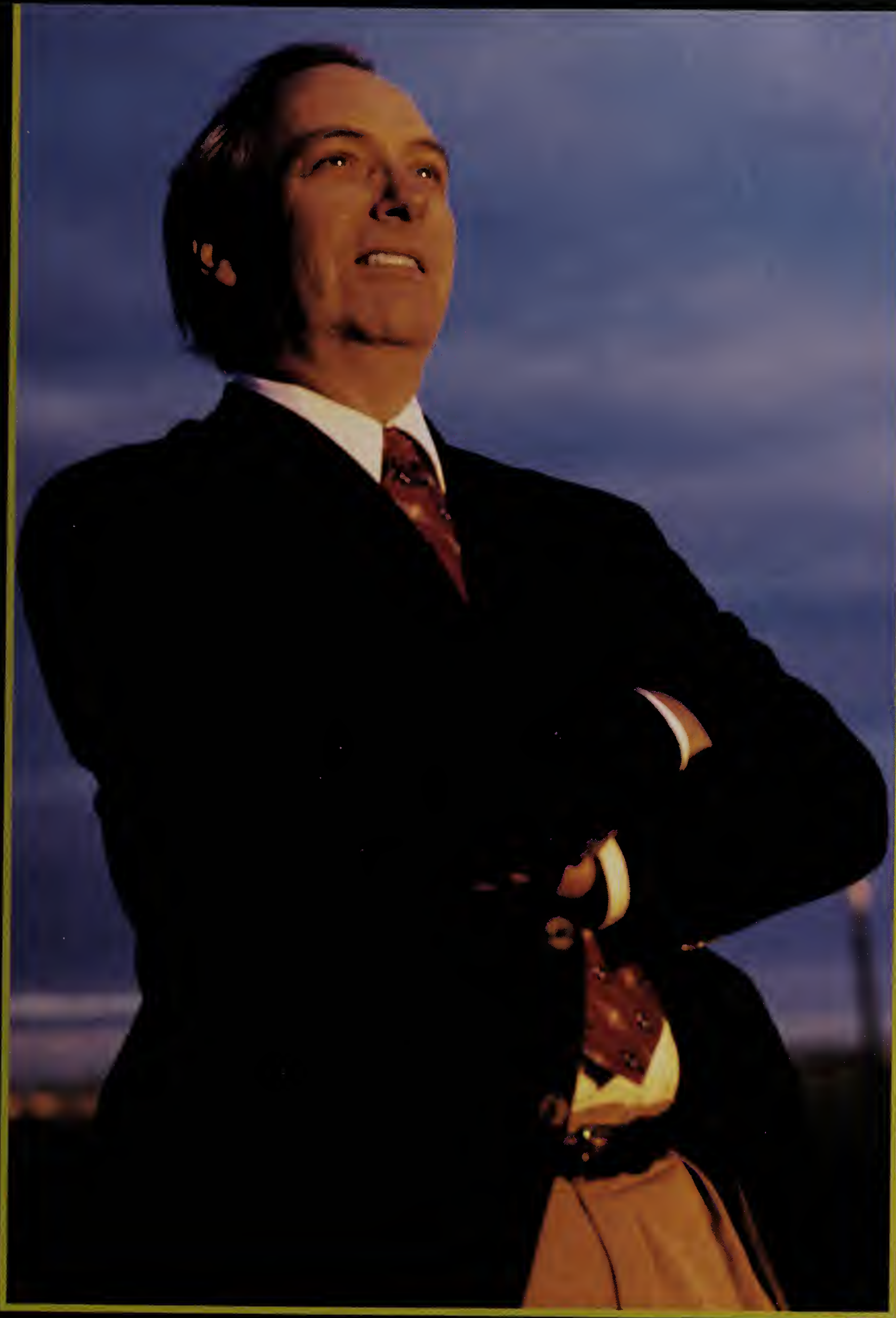
untapped options for bolstering IT staff.

Resourceful IT leaders are expanding their view of the prospects up and down the spectrum of age, locale and physical ability. And although

Reader ROI

THIS ARTICLE WILL HELP READERS

- ▶ See how some CIOs have tapped unconventional sources of IT labor
- ▶ Understand the bottom-line benefits of developing untrained workers
- ▶ Determine if they've overlooked valuable people



FAR FROM HOME: Supervalu CIO Bob Borlik scanned Minnesota's rural landscape for IT workers. He found plenty.

PHOTO BY STEVE WOIT

COVER STORY: HIRING STRATEGIES

most of these solutions require companies to invest significant resources in training, these CIOs are watching their investments pay off.

There's no question that finding long-term solutions to a long-term skills shortage takes time and ingenuity. And some executives tend to think "giant sucking sound" when they hear the phrase *community partnership program*—an investment with no return other than goodwill. But the following CIOs have discovered the opposite is true.

Rural Citizens

Northwest Airlines

A COUPLE OF YEARS AGO, NORTHWEST AIRLINES INC. relied on offshore IT talent to bridge its staffing gaps. But the arrangement wasn't perfect. "It can be difficult to work through language barriers and time-zone differences," says

full-time workers. So Debronsky and Borlik decided to open a facility in Sebeka with about 30 programmers to start. To mitigate the risk of being saddled with a satellite facility if the arrangement did not work out, the workers were employees of Cross, not NWA. But Northwest made it clear the relationship was for the long haul, and Borlik viewed Sebeka as an NWA satellite location, not just a big bunch of contractors.

"We were looking for longevity in the relationship. We want people who have worked on our systems a long time. That's where we get the best synergy," says Parker. Sebeka programmers have worked on Y2K remediation as well as on maintaining the company's Cobol applications. Once they have a certain amount of training and experience, Sebeka employees are eligible to join NWA's 1,200-person IT staff at headquarters.

Because the majority of Sebeka employees come from service-industry jobs and do not have technical skills prior to joining the company, Cross pairs new workers with

*For the workers,
being able to work for Northwest in Sebeka, Minn.,
means they don't have to leave town
to make a living wage.*

John Parker, vice president of information services for \$9 billion NWA in Minneapolis-St. Paul.

Another option soon presented itself.

One day in late 1997, Parker's predecessor, then Vice President of Information Services Bob Borlik, read a newspaper article about the plight of Minnesota's forgotten rural towns. A multistate electrical and telecommunications cooperative had just installed state-of-the-art frame-relay wiring throughout the town of Sebeka (population 600) in a bid to attract businesses. (The cooperative is in the process of wiring many rural communities throughout the heartland.)

Borlik was intrigued. He dispatched a few consultants from Cross Consulting Group Inc. to the town—200 miles from Minneapolis—to scout around for a way to set up a rural outpost to extend NWA's development staff.

"We thought there was a chance it could provide us with a more stable workforce at a cheaper price than any of the major metropolitan areas. It wasn't as cheap as offshore labor, but if you factor in the intricacies of working with staff from another country, you're not that far off. It was worth a try," says Borlik.

NWA had been paying offshore developer companies between \$20 and \$30 per worker per hour. Cross Consulting President and Co-CEO Nick Debronsky figured the price point for rural workers would be between \$30 and \$50 per hour. Hardly chump change, but fully 30 percent to 40 percent lower than metropolitan rates for

mentors with more technical expertise. "It takes about a year for them to become proficient," says Ross Graba, vice president and director of operations for Cross in Apple Valley, Minn.

For the workers, being able to work for Northwest in Sebeka means they don't have to leave town to make a living wage. "It was either work here or bag groceries," says Project Manager Andrew Ronneberg.

"Having grown up in Sebeka, I didn't want to move to the city. Life has a slower pace here," says Ronneberg, one of 40 who graduated with his class at Sebeka High. "I want my [3-year-old] daughter to go to Sebeka High," he adds.

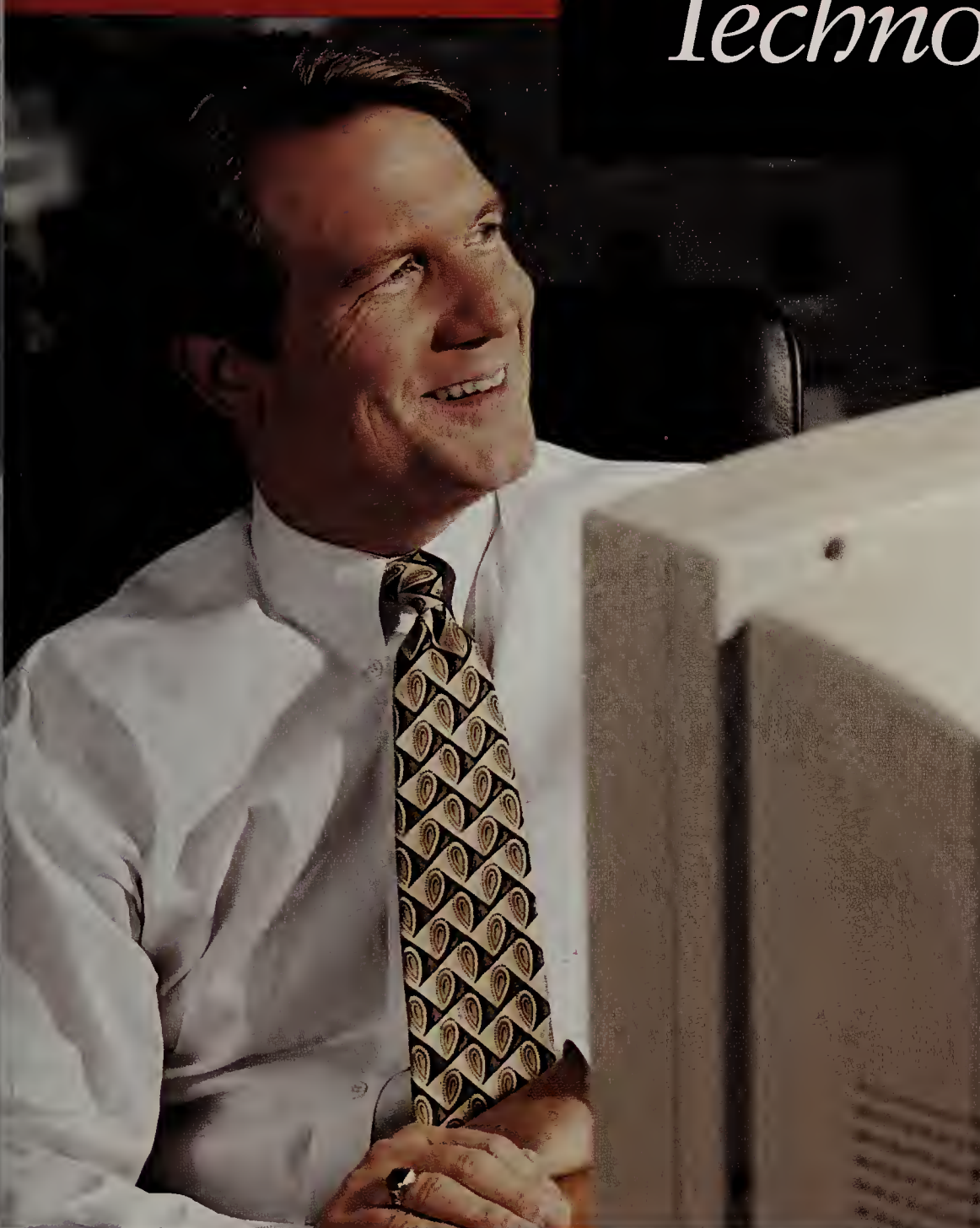
Borlik, now senior vice president and CIO at \$23 billion grocery retailer Supervalu Inc. in Eden Prairie, Minn., is evaluating a similar deal with Cross at the company's brand-new Watford City, N.D., facility.

Borlik sees the arrangement as a way to tighten the links between contractors and Supervalu. "Generally, you can't count on your outside [contractors] being there for the future. This is a little different. As you groom the consultants, they become more stable and they'll stay around. It's a new concept," says Borlik.

The high retention rate associated with rural workers can be a competitive advantage for a company that uses them, says Christopher Young, IT project manager for the Economic Development and Finance department for the state of North Dakota in Bismarck.

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In a field rife with arrogant young things making \$80,000 right out of the starting gate, CIO Steven Orenstein believed a more seasoned workforce could become his advantage.

Low labor costs are an undeniable benefit too. "North Dakota is ranked number 51 [including Washington, D.C.] in terms of average high-tech wages. I'm not particularly proud of this. But it's a function of a phenomenally low cost of living," Young says. For example, a new five-bedroom house with central air, a large yard and a nearby school costs about \$120,000.

Despite these advantages, Northwest's Parker cautions the arrangement is not for every company. IT staff at headquarters must do extremely detailed design for any project that Sebeka employees will work on so that objectives are clear. And staying in touch with the offsite developers is critical. In addition to daily contact via phone and e-mail, Northwest staff visits Sebeka to provide application training as well as for quarterly progress meetings, and Cross has an onsite relationship manager at Northwest's facility.

For companies willing to do the work, taking advantage of rural workers can be a cost-effective way to extend their IT staff.

Older Workers

Evergreen International Aviation

STEVEN M. ORENSTEIN NEVER SET OUT TO HIRE mostly older people for his IT staff. It just worked out that way.

As CIO of aviation holding company Evergreen International Aviation Inc., Orenstein has had chronic problems finding the right IT people to hire. At any time, his IT staff openings range from about 10 percent to a painful 15 percent of Evergreen's total IT jobs. He abandoned the idea of finding anyone with aviation experience long ago.

Orenstein's difficulty in finding suitable IT staffers springs partly from location: Evergreen is located in tiny McMinnville, Ore., halfway between Salem and Portland. Partly, the difficulty is due to technology: The business runs on three aging, Cobol-based Hewlett-Packard minicomputers; few people have those skills or the desire to learn them. And culture is to blame for part of the problem. Orenstein runs a much more formal shop than most IT departments these days. Staffers are required to wear coats and ties or dresses every day except Fridays. And everyone has to wear beepers and take a turn being on call overnight.

With the hiring deck seemingly stacked against him, Orenstein had an epiphany one day. At the latest in a

string of "over the hill" employee birthday parties, he realized that many staff members were over 50; he calls them "seasoned citizens." (He puts himself in the same category.) Seven of his 13 staff members were over 50. The more seasoned people, he realized, were much more likely to make a long-term commitment to Evergreen. In a field rife with arrogant young things making \$80,000 right out of the starting gate, Orenstein believed a more seasoned workforce could become his advantage.

"At first I was not specifically targeting older workers. But at some point it became clear that's what we would find."



OLD ENOUGH TO KNOW BETTER: Steven Orenstein's IT workers bring decades of experience to Evergreen International Aviation.

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COVER STORY: HIRING STRATEGIES

And then it became clear they were a good fit," says Orenstein. With tumultuous life events such as raising a family mostly behind them, older workers are free to concentrate on their work. No one personifies this premise better than Orenstein himself. Now in his mid-50s, he has often worked seven days a week since he joined Evergreen eight years ago. Orenstein especially wanted a pledge to stay more than a year from the Cobol programmers he brought on to run the systems. "We have a long learning curve in this area. It can take six months to become competent and a year to be fully functional on our systems. The more seasoned individuals seemed much more comfortable with making a long-term commitment," he says.

The only potential trap of hiring predominantly older people? Hiring someone with decades of experience who never progressed in his job.

"[Such people] sit in the same corner and monitor the same system year after year, so they don't learn anything. We found way too many people who came out of big shops who fell into that category," Orenstein adds.

High School Students Wilfarm

VINCE WARD REMEMBERS WHEN IT DAWNED ON HIM that his company was not taking its high school intern Jeremiah Slater nearly seriously enough.

Two weeks into a six-week internship, then high school senior Slater did unusually sophisticated work on a project developing HTML screens. What's even more impressive, Slater did the work with minimal supervision, says Ward, IT project manager and the most senior IT person at Wilfarm LLC's headquarters, a Kansas City, Mo., distributor of crop protection products.

"We just gave him a book on [Microsoft] FrontPage 98 and told him to read it," says Ward. "We had the attitude of, 'It's free help, so if we get anything out of it, it's a bonus.' But we quickly learned Jeremiah had higher expectations." Then Ward realized he owed it to Slater to spend some time mapping out projects that would help him acquire marketable skills.

For his part, Slater thought the lack of supervision in



GET 'EM WHILE THEY'RE YOUNG: Jeremiah Slater (left) started programming for Wilfarm IT Project Manager Vince Ward long before graduation. High school graduation, that is.

the unpaid internship was normal. "I learned quite a bit doing it on my own. I felt it was going fine," he says.

"It easily could have been a very bad internship," says Ward. High school students require a higher degree of supervision than other employees. It wouldn't have been surprising if the student had sat in his cubicle and read magazines rather than learn. Thankfully, Slater turned out to be highly motivated and self-directed. (The Kansas City School-to-Career program that sent him to Wilfarm takes students only with a GPA of B and higher.)

Ironically, while Ward was overlooking Slater, he was scrambling to fill Wilfarm's open IT slots. "It's been extremely hard for me to find qualified people. There's a lot of pressure on benefits and salaries," says Ward. As soon as he realized the extent of Slater's untapped potential, he began to take the young man very seriously indeed.

The first major project Ward had Slater take on was developing a Web interface for the company's AS/400 applications. Slater was well underway on that project when the internship ended, so Ward offered him a permanent part-time job during his senior year at North Kansas City High School.

Today Slater works roughly 30 hours a week for Wilfarm while attending college, and Ward would be more than happy to hire him as a full-timer some day. Slater recently developed Wilfarm's corporate intranet—for \$7.25 per hour, no less—and is now working on a revamp of the intranet using Lotus Domino.



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COVER STORY: HIRING STRATEGIES

Many CIOs may not realize what a good resource local School-to-Career programs can be. The Information Technology Association of America sponsors a national program to address the IT skills gap in grades K-12. (For more information, visit www.ita.org/workforce/index.htm.) But companies must have well-planned programs and not just leave the students to fend for themselves.

"Many executives are reluctant to fill their IT staff with high school students. But companies should look at this as the way to build the pipeline of future workers," says Jeffrey Joerres, CEO of Manpower Inc., a temporary employment and international staffing services provider in Milwaukee.

Disabled Workers

Manpower

TED LARSON MAY HAVE BEEN BORN WITHOUT SIGHT, but he sees his career as a computer programmer very clearly.

"I just want to be productive. And I love programming," says Larson, a senior programmer on the IT staff at the headquarters of temporary-employment services provider Manpower.

Robbed of his eyesight at birth nearly 50 years ago, Larson received his first technical training in 1970 at Southern College of Business and Technology in Orlando, Fla. There he learned to program in Assembler and Cobol, skills he was eager to put to work. "I didn't want to go through four years of college and not get hired as a programmer. I didn't want to work at a food stand," says Larson.

After graduation, Larson found a job at the Milwaukee Insurance Co., where he was a member of the IT staff for 26 years, developing and maintaining a variety of



KEEP AN OPEN MIND: Jeffrey Joerres, CEO of Manpower, tells staff-strapped CIOs to look for creative staffing solutions. The smart ones listen.

insurance-related applications. In 1998, when Trinity Universal Insurance Co. bought Milwaukee Insurance and moved the IT division to Dallas, Larson found work at Manpower Technical (the technical-services arm of Manpower) prior to moving to his current job at headquarters.

"The reality is, disabled people have tremendous skills. Why would the disability prevent them from doing what they're supposed to do?" asks CEO Joerres.

Joerres says he works hard to ensure his company's work environment—and that of his client companies—is 100 percent rejection-free.

To ensure his disability does not impede his work, Larson uses a variety of adaptive technologies. He has an IBM Screen Reader that reads him everything that appears on the computer screen. He has a special printer that outputs all data in Braille. He also has a scanner and speech synthesizer that translates printed materials to speech.

But it's not all about the technology. "Most of the adapting that needs to happen is with people," says Peter Stockhausen, CIO for Manpower. "Everyone in Ted's work area knows the situation and makes very minor accommodations, such as opening doors for him. None of that

interferes with the work. In fact, it knits the group much tighter and they end up being more productive."

That doesn't surprise Kevin Ellerman, a professor



NOW YOU SEE IT: Manpower CIO Peter Stockhausen (left) knows that Ted Larson's disability hasn't diminished his love for programming.

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Taking IT to the Streets

Milwaukee companies find that technology workers can come from unlikely places

WHAT DO YOU GET when you mix an IT-savvy priest with Milwaukee's inner-city youth? Some CIOs are finding that the answer is more qualified IT workers.

Homeboyz Interactive Inc. was founded in 1996 by Jim Holub, a Jesuit priest. The company trains Milwaukee's disadvantaged young men and women to work in IT, particularly in Web development.

After seeing too many young victims of gang violence, Father Jim concluded that inner city kids desperately need skills that can buy them a ticket off the streets. He saw technology as the answer, since IT jobs paying lucrative wages abound. (See "The Soul of the New Regime," CIO Section 1, Dec. 1, 1998, for a related story.) Father Jim taught himself HTML and trained a few kids on an old PC in a decrepit convent on the south side of Milwaukee. Within eight months, he had eight people pursuing good jobs. Since then, Holub has taught himself and his young charges other Web skills, including cascading style sheets, active server page development, MS access and JavaScript. Private and public sector groups have donated computers, software and other resources. With more than 10 people in the program at a time, Holub shares the training duties with three paid staff members and plans to hire two more.

And he's refined the program a bit. First, the potential student generally goes through drug and alcohol rehabilitation (which an anonymous benefactor pays

Father Jim Holub works to keep members of Homeboyz Interactive off the streets and in the computer lab.



for). Then he must pursue his GED while holding down an unrelated part-time job for at least three months. Next, the student undergoes an intense period of technical training at Homeboyz. As part of this training, the student is entitled to work on contract Web projects for between \$8 and \$15 per hour. Then, and only then, does Holub help the graduate find a permanent corporate position.

Since its inception, Homeboyz has graduated nearly 113 students, most of whom have gone on to find good jobs at companies like Amoco Corp. and Northwestern Mutual Life.

"I don't give a hoot about what people think they can't do. I build on capacities rather than focus on weakness," says Father Jim.

—L.G. Paul

of information systems at the Community College of Denver. For 18 years, the college has worked with employers on its Business Advisory Council developing curricula to train disabled people for IT jobs.

The council has a mentoring program called Computer Training for People with Disabilities that matches business people with disabled people who are in the middle of technical training programs. "That helps displace the prejudices [against hiring the disabled] much more than any dog-and-pony show we could ever do," says Ellerman, who is also blind. The program has been

so successful that it is being replicated in Denver and has received federal grants to replicate the program across the country.

As for Larson, he intends to learn more programming languages and would like to develop Internet skills. "My disability has not impeded my career. I always figured I would succeed or not succeed based on my own innate abilities," he adds. **CIO**

Lauren Gibbons Paul is a freelance writer in Waban, Mass. She can be reached at lauren paul@mediaone.net.

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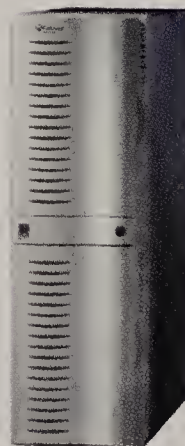
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Russ Mayer is both the senior vice president of IT and chief quality officer at NBC.

Some CIOs are taking on responsibilities in areas far from IT. Get ready for...

Double Duty

BY HOWARD BALDWIN

At the end of a particularly grueling 14-hour day, Russ Mayer sometimes wonders how he let Jack Welch talk him into taking on double duties at NBC.

In addition to being senior vice president of IT at the New York City-based television network, Mayer also has the title of CQO: chief quality officer. If you know anything about NBC's parent company, General Electric Co., you know that

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CIOs ARE TAKING ON DUAL responsibilities in operations, logistics, marketing and more. Read on to learn

- ▶ How double duties make CIOs more valuable
- ▶ Why coworkers can make or break success
- ▶ What skills double-duty CIOs need to thrive—and survive

PHOTO BY JOHN RAE

CIO ROLE



Craig Courter, CIO of Seltzer, Caplan, Wilkins & McMahon in San Diego, doesn't just help lawyers—he is one.

PHOTO BY MARK ROBERT HALPER

chairman and CEO Welch is driving every division to analyze, improve and control processes in search of the utmost quality. For Mayer, that may mean figuring out the smoothest method for the *Tonight Show* director to queue up commercials, along with making sure the sys-

tems run as smoothly as GE appliances.

When it comes to doing double duty, Mayer is no anomaly. He's part of a growing number of CIOs who are taking on new responsibilities in a variety of fields. Some volunteer for additional duties, others are recruited. Their industries

range from broadcasting to retailing to banking. Their additional responsibilities include marketing, operations, logistics and more. There's even a CIO for a San Diego-based law firm who argues court cases, either using the lat-

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CIO	Company	Responsibility	Hours Per Week	Recruited or Volunteered?	Increase in Salary Duties Bring
Craig Courter	Seltzer, Caplan, Wilkins & McMahon	Lawyer	60	Volunteered	None
John Hnanicek	Hollywood Entertainment and OfficeMax	Logistics	60	Recruited	Minimal
Terry Jones	Sabre	R&D	60	Recruited	Minimal
Robert W. Keddie Jr.	Beneficial Savings Bank	Operations	50	Volunteered	None
Peter Solvik	Cisco Systems	Consulting	60	Volunteered	None (options increase)
Jon Wood	Coles Myer	Marketing	55	Volunteered	No comment

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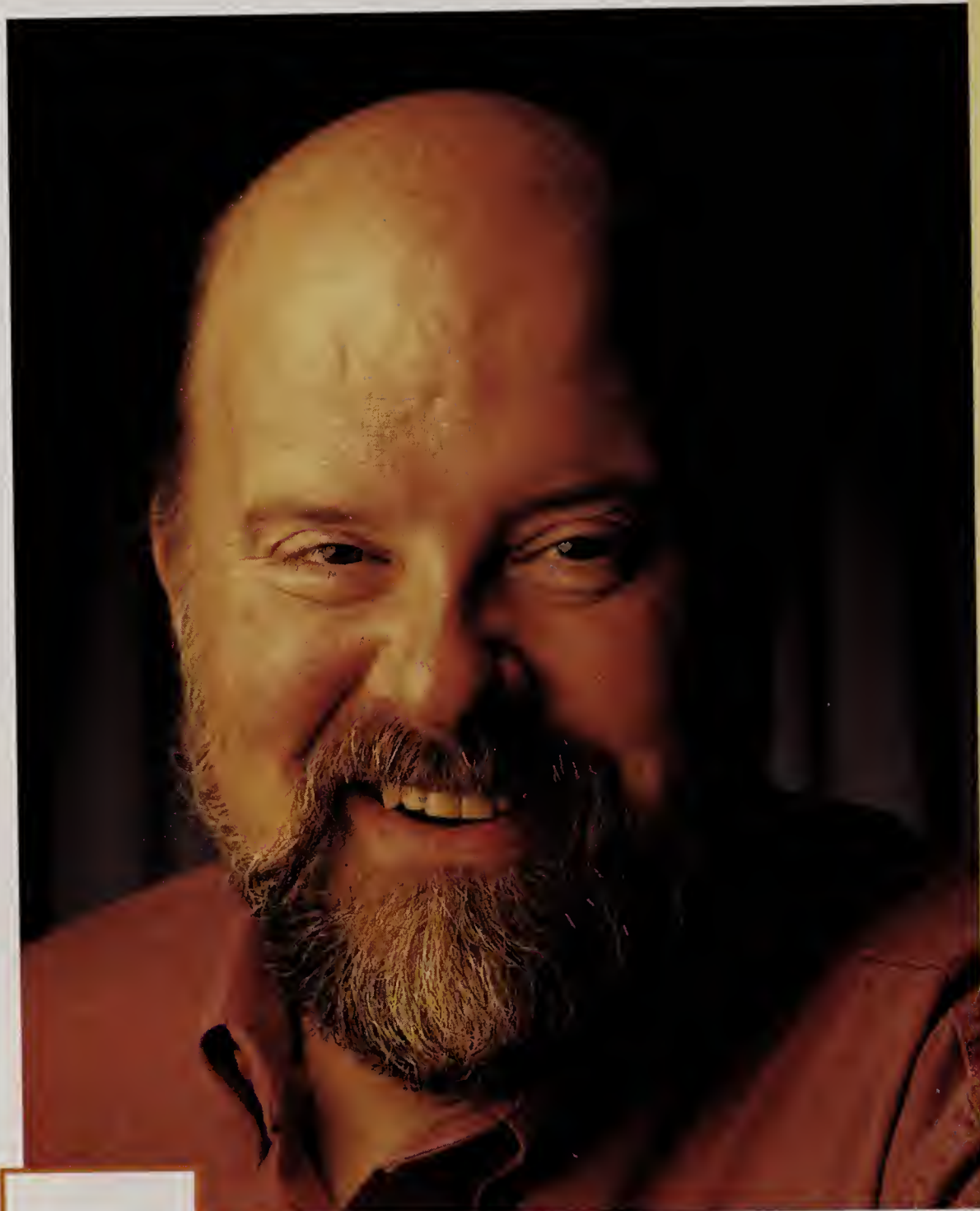
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**Terry Jones
heads IT
and R&D
as CIO
of Sabre**

est technology or deposing witnesses about it.

It's not easy. Not everyone can do it.

It takes a certain kind of CIO and a certain kind of company whose culture accepts such duality without short-circuiting. Oh, and one other thing: None of these double-duty CIOs ever got a whopping raise to compensate for the extra responsibility. But it is possible. Having one person in two jobs can be a boon for all parties: the CIO develops a broader perspective of another set of the company's business processes, and the company gains a high-level executive who understands multiple facets of the business. Beverly Lieberman, president of Halbrecht

Lieberman Associates Inc., a Stamford, Conn.-based search firm that specializes in placing CIOs, says companies have come to her looking specifically for CIOs who have experience in other areas so that they can continue their dual responsibilities. Lieberman says she's seeing a strong trend toward CIOs handling electronic commerce, where commerce and computers really merge. "These are companies that believe the IT function is so vital to their business that they want the executive running it to be prepared to take on related responsibilities, because those responsibilities are information intensive." As technology becomes a bigger part of the business, the business relies more on the people who know the technology.

Don't Go There

A former CIO offers a caveat about double-duty responsibilities

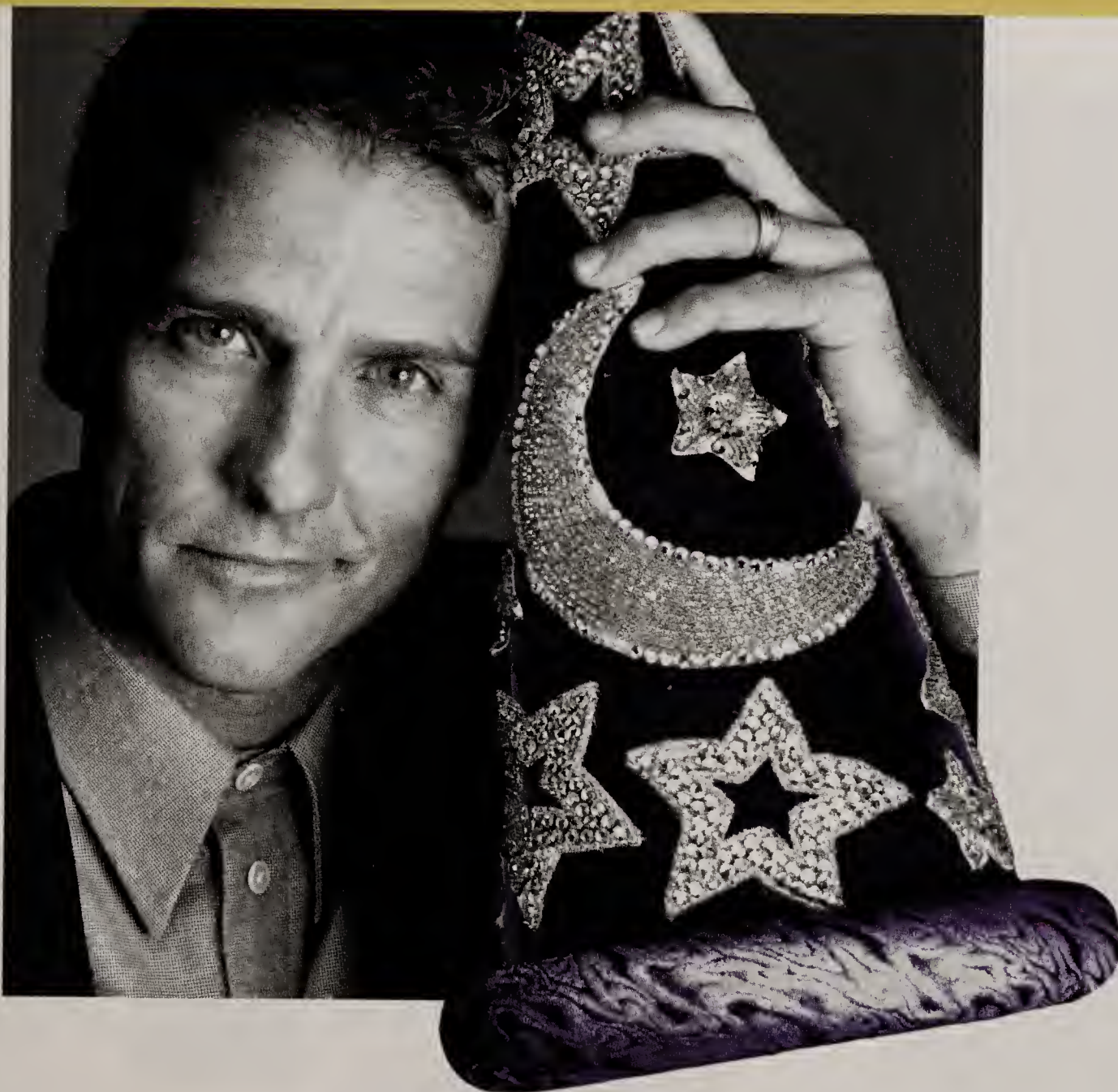
AS A WITNESS TO AND veteran of double-duty responsibilities, former CIO Jim Sutter urges CIOs to learn from his mistake: don't get saddled with purely administrative duties. When he was CIO at Xerox Corp. between 1975 and 1983, Sutter was given responsibility for peripheral tasks like payroll, office services and overseeing the print shop. "It may sound like broader responsibility," Sutter warns, "but those things are a distraction. They don't add to your clout or strategic insights. They just give you a lot of busy things to look after." It's symptomatic of a company where the CEO regards IT as administrative overhead, not key to competitive advantage. Today he'd turn down the work.

But how do you reject an offer that you feel isn't in your best interest without sounding like a poor sport? "Turning down things is not difficult," advises Sutter, now a principal at Newport Beach, Calif.-based Peer Consulting Group, advising CEOs and CIOs on technology strategy. "It shows that you're not an empire builder." On the other hand, he suggests, if the company's in a tough spot, a savvy CIO might volunteer to step in with the proviso that it will be temporary and that the administrative responsibilities will be swapped for something more strategic before too much time goes by.

—H. Baldwin

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"You're kind of a mini-CEO when you're doing marketing and IT. You're deciding on the future of the company, and that's a lot of what the CEO does." —DEAN SIVLEY, CEO, ATLAS TRAVEL TECHNOLOGIES



John Hnanicek, CIO of eToys, says the double-duty role isn't child's play for CIOs or their executive colleagues.

At the same time, there are obstacles and even drawbacks. As one CEO, himself a former CIO, says, "Having the wrong person in two jobs can screw things up twice as fast."

JUGGLING PARTNERS

Ever seen a juggler perform? He has to keep his eyes on all the balls. He needs

to be really good at time management. He needs to be flexible.

Take Craig Courter, a practicing attorney at the firm of Seltzer, Caplan, Wilkins & McMahon in San Diego. He began practicing law in 1986, though he'd always been interested in computers. He took responsibility for the firm's computer systems in 1988 and was officially designated CIO in 1998. In that position, Courter spends about 20 percent of his time on legal tech-

nology issues and 80 percent of his time on IT-related issues. But part of the latter includes preparing for the technical side of court cases. By computerizing much of a colleague's presentation, he can speed up court cases and make his coworkers appear more efficient at the same time. "It's painful to watch an attorney fumble around to put a document in front of a witness," he says.

More than once, Courter has scanned paper-based depositions or photographs of evidence into an imaging system, bar-coded it all, and then given the lead attorney hard copy with bar-code labels pasted next to the appropriate text. Running a wireless scanner over the bar code, the lawyer can bring up an image on a projection display instantaneously. Now

Courter has started accessing MPEG files of videotaped depositions in case witnesses contradict their previous statements in court. While he's known some lawyers who have functioned as their firms' IT guru, he believes he spends more time than most on IT issues. "I

don't know how law firms pull it off without somebody who doesn't know the practice of law and knows computers and can marry the two," he says.

Now, instead of envisioning one juggler, envision juggling partners. That's the precept for how good a CIO's staff has to be. Not only does the CIO need to be skilled, he needs to be able to rely

implicitly and almost instinctively on subordinates. Robert W. Keddie Jr., who handles both IT and banking operations as executive vice president and CIO for Philadelphia's Beneficial Savings Bank advises, "Make sure you have people working for you that are better than you, so you don't have to worry about them."

The mantra of double-duty CIOs: delegate, delegate, delegate. "You can't do this if you're a micromanager," warns Jon Wood, who oversees both marketing and application development as CIO of Coles Myer Ltd., a

flag: If the IT department is not well regarded within the company, accepting more responsibilities outside of IT will not inspire confidence. Put your own house in order before you start in on the neighbors'.

WHAT THE CIO GETS OUT OF IT

One of the biggest advantages to holding two jobs is the perspective it brings. "I like multifunction jobs because I get

"I like multifunction jobs because I get a different point of view from each area. You have to keep both perspectives when you're listening to both the marketing and technology guys."

-JON WOOD, CIO, COLES MYER

Melbourne, Australia-based retail conglomerate. He gained supply chain management experience at Ford Motor Co.'s Australian division as a design engineer before working in Coles Myer's strategic marketing and catalog retailing areas. He cut his systems teeth on revamping the company's frequent-shopper program.

Peter Solvik, who as CIO of Cisco Systems Inc. in San Jose, Calif., also heads up its Internet Business Solutions Group, a division devoted to consulting, agrees. Because he can attend only about half of IT staff meetings, he delegates responsibilities that would normally be in his purview. "I empower my IT management team to manage without me there all the time. A lot of decisions are made without my participation." An extra benefit: This broadens the employees' experience.

Solvik advises CIOs to not even consider taking on more responsibilities unless they have a staff that excels at collaboration. Another red

a different point of view from each area," says Coles Myer's Wood. "You have to keep both perspectives when you're listening to both the marketing and technology guys."

In fact, that perspective is remarkably similar to the one that a CEO or chief operating officer needs. This advantage isn't lost on double-duty CIOs. There's no doubt, says Sabre Inc.'s Terry Jones, that a double-duty CIO is better suited to be a CEO than an executive without the breadth of experience that multiple responsibilities bring. "Somebody who has a lot of IT and some of everything else might be better off [than someone with a single skill set] in the long run, but they'll have to have the other component parts [of the business]," believes Jones, who's already run several travel companies. He came on board when one of them was purchased by American Airlines Inc., the parent company of Sabre in Fort Worth, Texas. "In the past, it was finance and manufacturing guys who rose to the top, and that made sense

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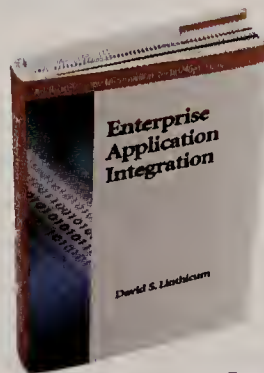
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Career Paths

Many CIOs who are handling double duties do so to gather experience to move up to another executive office. For more on CIOs becoming CEOs, see "Trail to the Chief," *CIO* Section 1, Aug. 1, 1999. Since former Senior Writer David Pearson began researching that story, there have been several other CIO ascensions.

■ **April 1999** Thomas L. Thomas leaves his CIO post at 3Com Corp. to take over as chairman and CEO of CRM developer Vantive Corp.

■ **July 1999** Neal Bibeau, who was both the CIO and vice president of marketing for Rosenbluth International (Dean Sivley's previous position), is promoted to lead a new division called Rosenbluth Interactive (see "Double Vision," *CIO* Section 2, Oct. 15, 1999).

■ **July 1999** After a stint as COO, former Compaq Computer Corp. CIO Michael D. Capellas takes over as its president and CEO.

■ **August 1999** Louis Burns, Intel Corp.'s director of IT, is promoted to general manager of the company's new platform components group, which designs processors and chip sets.

—H. Baldwin

in the economy of the times," Jones says. "There's a growing number of companies that will require a much heavier dose of IT background."

One CIO who has already made the leap certainly had the breadth in other fields. Dean Sivley, CEO of Atlas Travel Technologies Inc. in Morristown, N.J., a developer of tour management software, handled both IT and marketing at Rosenbluth International until September 1997. It helped that his University of Wisconsin undergraduate degree was in

to CEO. "You're kind of a mini-CEO when you're doing marketing and IT," Sivley says. "You're deciding on the future of the company, and that's a lot of what the CEO does. As CEO, I've added finance and human resources. It's a natural progression, and the skill sets are transferable."

The CIO is not the only winner in this scenario. The company that successfully engages a double-duty CIO derives value from the CIO's dual perspective as well as the cohesion that results from having deci-

focusing on something else. This came straight from Jack Welch, who told him, "Take your best people and make them black belts."

RIISING TO THE CHALLENGE?

Taking on a special project wreaks havoc with any schedule. But when that extra work is permanent rather than temporary, prepare for a period of adjustment. Besides the requisite time management skills, the double-duty CIO requires lots of energy and follow-through. If you can't handle that, don't bother considering the possibility. "I've had to constantly juggle my time to properly [pay attention] to both duties," sighs Cisco's Solvik, who says he's had to make some tough decisions regarding what he spent his time on. Ultimately, he says, it meant spending less time on IT, a sentiment other CIOs in the same situation echo.

Equally important is the right culture. "It has to be a culture that's willing to think untraditionally," says CIO John Hnanicek at Santa Monica, Calif.-based eToys Inc. "The CEO has to be divorced enough from the old-school idea that CIOs are silo technologists." Based on his experience—Hnanicek held dual responsibilities (logistics and IT) in two previous jobs at video rental firm Hollywood Entertainment and office-supply retailer OfficeMax—he believes that attitudes toward CIOs are changing and that the

idea that they can manage only IT is becoming less of an issue.

Ultimately, Atlas's Sivley warns, the biggest downside is how a con-

It's not easy. Not everyone can do it. It takes a certain kind of CIO and a certain kind of company whose culture accepts such duality without short-circuiting.

business administration and that he earned an MBA from Columbia while he was working in IT for Duracell. (For more on Sivley and other CIOs who've leapt up the executive ladder, see "Career Paths," above.) To Sivley, there's no doubt that his double duty was the deciding factor in getting him the CEO job at Atlas. In his eyes, managing dual responsibilities is a great step to take before jumping

sion making for two divisions concentrated in one person. "You have fewer crises than you had before," NBC's Mayer says. Because you know what's going on in at least one other part of the business, you're aware of difficulties that might be brewing. "You can fix things before they become problems," he says. In addition, he notes, empowered subordinates step up if a problem arises when the CIO is

concentration of power can adversely affect the company. "If things don't work out, it's a big gamble," he says. "But the flip side is that you can get things moving twice as fast." **CIO**

Senior Editor Howard Baldwin, whose double duties only go as far as writing and editing, can be reached via e-mail at hbaldwin@cio.com.



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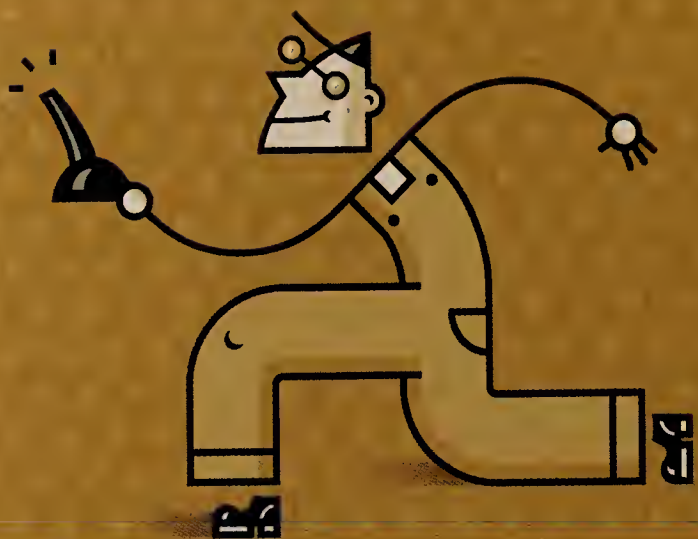
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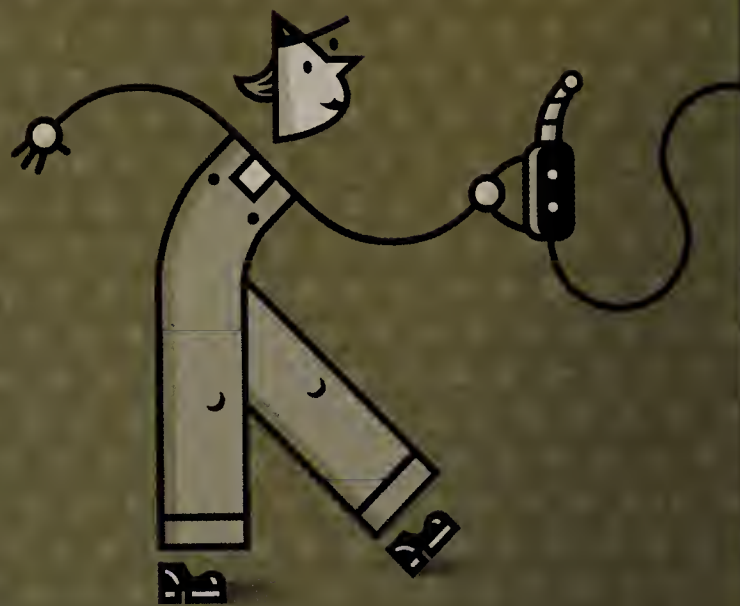
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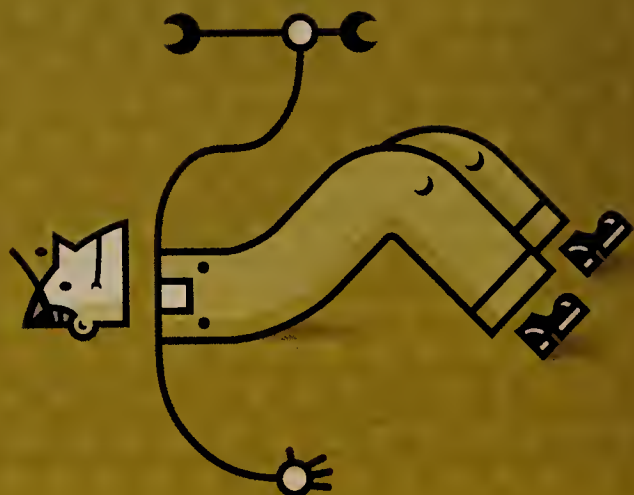
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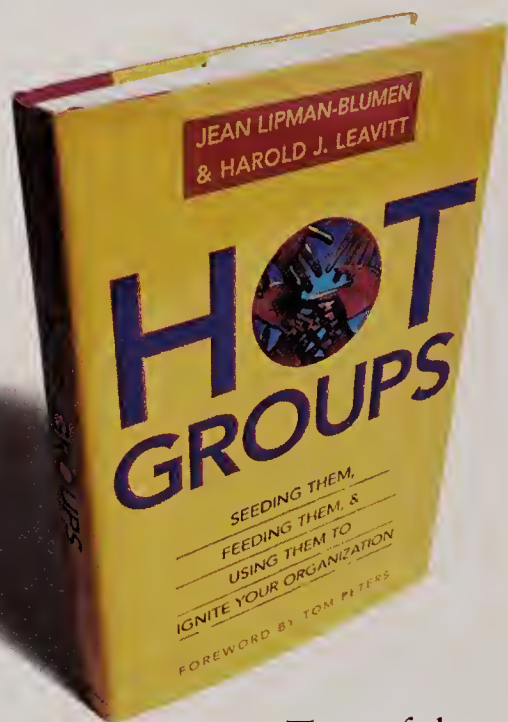
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“A **hot group**, we repeat, is **not** a name for another kind of organizational unit. A hot group is **not** to be confused with a team, task force, panel, board or committee. **It is a state of mind**, shared by a group’s members.”

BOOK EXCERPT: HOT GROUPS



The following is excerpted from chapter 4 of the book **Hot Groups: Seeding Them, Feeding Them & Using Them to Ignite Your Organization**, by Jean Lipman-Blumen and Harold J. Leavitt (Oxford University Press, 1999, \$25)

How Hot Groups Work: Fast, Focused and Wide Open

Two of the most prominent characteristics of hot groups are a deep dedication to their tasks and an equally deep faith that their work is meaningful and consequential. From those two attributes alone, it is easy to see why many organizations find it hard to love them. Their single-mindedness can make them look self-centered and uncooperative, and their fervent commitment to their cause can easily be misread as pigheadedness. There is much more to

hot group working styles, however; here is a more complete set of working behaviors that typically accompany the hot group state of mind. Some should look familiar to all organization dwellers. A few may seem weird or even absurd, perhaps because they are so uncommon in traditional organizations. Several of them clearly carry large costs along with their benefits.

In hot groups, people's feelings about one another don't much matter.

In most other small groups, interpersonal relationships loom large. Friendships, status issues, and personal likes and dislikes play a huge part in those groups' ability to function effectively.

These kinds of feelings play only a minor role in hot groups because feelings do not lead the parade—they follow it. Those interpersonal issues are typically submerged beneath the all-engulfing pull of the task. In hot groups, it is not mutual loyalty and trust that generate effective performance. Neither is it friendship nor understanding of one another's idiosyncrasies. Hot groups work the other way around. It is their task, not one another, that hot groups love, along with the process of working on that task together. When each person is being pulled by the magnetic power of the task, mutual trust can follow, albeit ineffably. Mutual understanding, loyalty and friendship often occur

in hot groups, but when they do, they are a result, not a cause, of commitment to their task.

We like Charles Handy's description, comparing a team of Englishmen to a rowing crew, describing them as "eight men going backward as fast as they can without talking to each other, steered by the one person who can't row!"

But as an Olympic oarsman once told Handy, "How do you think we could go backward so fast without communicating, steered by this little fellow in the stern, if we didn't know each other very well, didn't have total confidence to do our jobs and a shared commitment—almost a passion—for the same goal? It is the perfect formula for a team."

As hot groups progress, an emotional spillover usually occurs. Members become infatuated with everything associated with the task. Like people in love, they may make great sacrifices of their own resources and their outside relationships, initially for their cherished task and eventually for their cherished group. In the excitement of it all, the failings of their comrades, if not totally unseen, are mostly ignored or treated as acceptable eccentricities—unless they affect the work. Later, as the task nears completion, the warts may become more noticeable, either to be tolerated or perhaps eventually to cause enough irritation to fracture the group.

Often, in organizations, people selected to work on yet another committee feel as though they've



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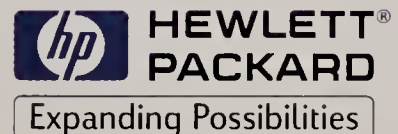
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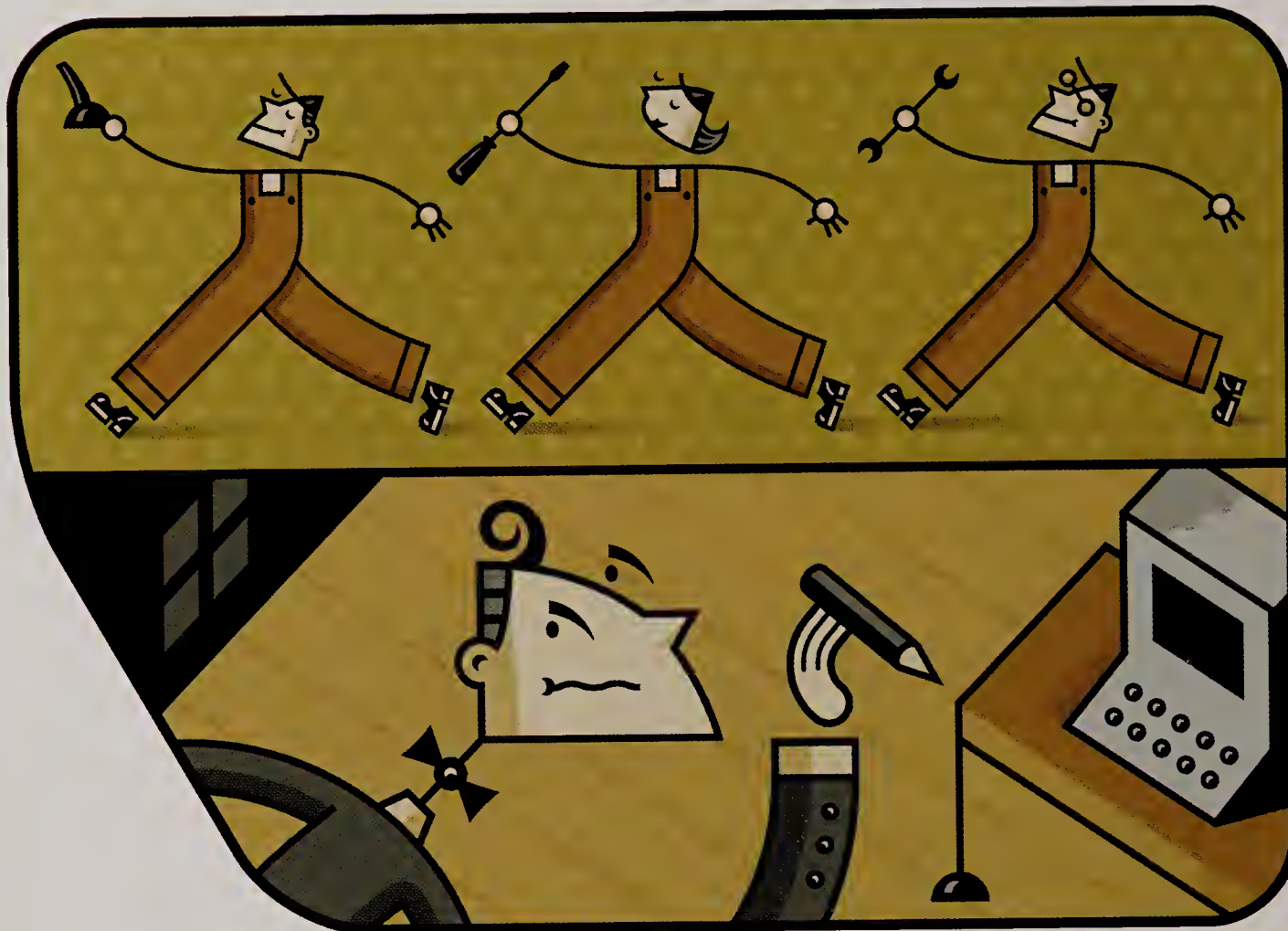
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someone in the group is likely to have just the right style to deal with the issue currently at hand and, second, because the overarching centrality of the task keeps everyone focused on the work, not on one another. (See "A Team Style Guide," Page 22.)

It is the rare—and usually quite successful—individual who can comfortably use all or most achieving styles as the situation warrants. The same, we believe, is true of groups. Having access to a full range of styles permits a group to cope with a wide variety of problems—if the members can live with one another's styles. That is where hot groups have the advantage. Hot group members are likely to welcome and utilize one another's

weird and wonderful styles as long as the task demands it.

been shanghaied. Hot group members never feel that way. They actively want to become involved in their group's work. That's one reason why hot groups seldom seek help for their psychological stresses, even though it has become commonplace for many non-hot groups to call in outside facilitators to help them sort out their interpersonal problems. Hot groups' initial commitment to the task makes their performance much less vulnerable to the interpersonal distractions that plague so many other groups.

In hot groups, the task's the thing, and it should stay that way. Beguiling a hot group away from its task to examine all those intriguing psychological issues can lead to disaster. If, however, they choose to detour for that purpose, it is not a good idea to deny them that right.

Hot group members need **diverse but compatible** achieving styles.

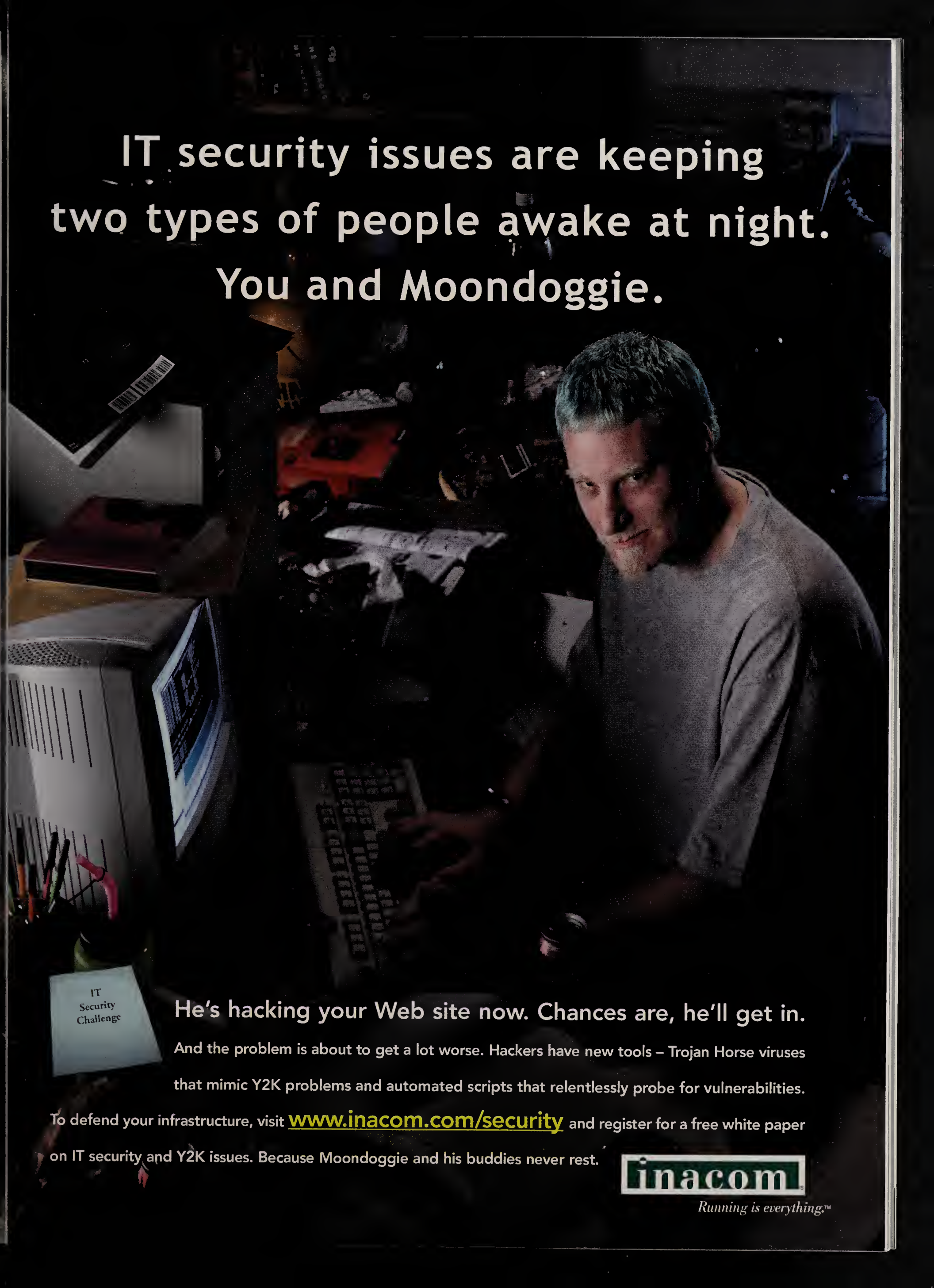
The most effective hot groups we have ever seen are composed of individuals whose achieving styles—their characteristic ways of getting things done—are very diverse yet compatible. In most groups, if some members are very competitive and others very collaborative, trouble is sure to follow. The two kinds of people are likely to grate on one another. In hot groups, however, the more styles the better, for two reasons: first, because all that diversity means that

Members of hot groups know **they're hot**, and they like to **strut their stuff**.

When a group is hot, members feel that they are special. They're on a high. That kind of hubris obviously carries both benefits and costs. It pumps the adrenaline of energy and imagination. It generates a readiness—because the group thinks so highly of itself—to take on challenges that others may see as too risky to touch. Some of the time, of course, those more risk-averse people turn out to be right. Risk-takers are bound to lose a few battles.

This self-confidence, however, also has its downside. It is usually read by outside observers as arrogance, and it can generate significant resentment.





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Hot groups don't try to live forever.

Most hot groups can't stay very hot for very long. They are, by nature, almost always temporary organizations.



Hot groups' "get in, do it, get out" style carries a distinct advantage. One of the major bad habits of many other "temporary" groups is their propensity to cling to life, even after their work is done. Often, they burrow into the organization's structure, building permanent dens for themselves and thereby further bureaucratizing their already bureaucratized parents.

The federal government provides many examples of organizational units that thrash about or hide out, desperately clinging to life long after their missions have been completed, torpedoed or abandoned.

Of course, there are significant downsides to the transient aspect of hot groups. To have small groups starting and ending here and there, all over the system, will require a resilience and flexibility not commonly found in large organizations. There will be practical issues, like how to relocate hot group members into other roles when their groups end. If hot groups develop frequently—forming, doing their work and then dissolving—it will put new pressures (albeit appropriately) on the human resources staff and other managers.

Hot groups work very long hours, but they don't perceive it as work.

For many hot groups, their exhilarating task is a source of joy, not a sentence to hard labor. Hot group behavior is often hyper, concentrated and focused, much like the movie caricature of the mad scientist rushing about in the crammed laboratory, on the verge of both the great discovery and the imminent breakdown.

Such resolution and its inseparable companion, obliviousness to normal routines, are still another reason why hot groups have a hard time in many large organizations.

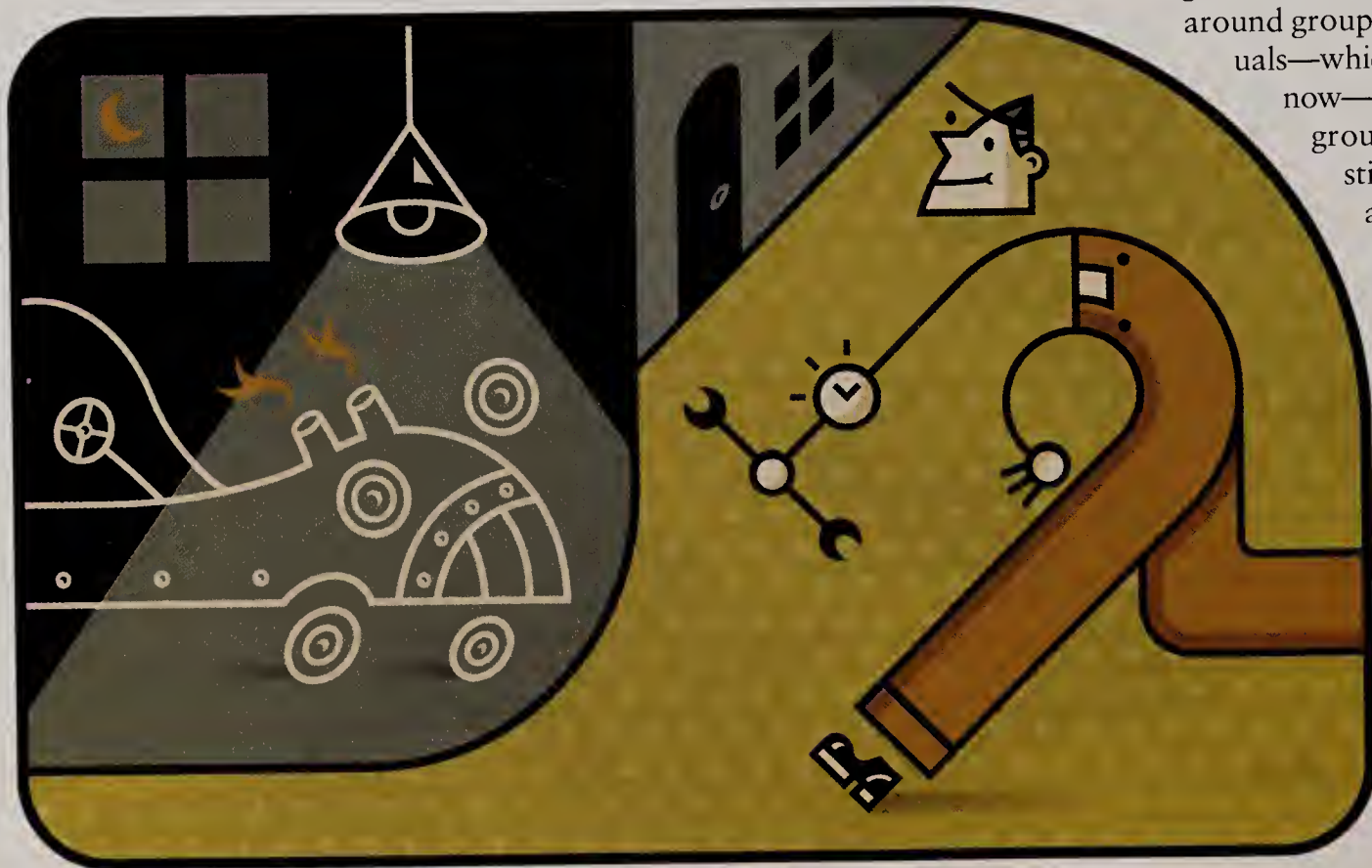
Hot groups work informally and democratically.

Hot groups pay little attention to symbols of rank and authority. Communication flows freely, up, down and across those groups. Members treat one another with casual respect, focusing on colleagues' contributions to the task at hand rather than on title or status. The behavior of leaders, too, is egalitarian vis-à-vis the rest of the group. This does not mean that all decisions are made by majority rule but that all members' voices are heard and taken seriously. Such wide-open interaction is highly functional, especially when speed and imagination are vital.

There remains another dilemma, this one between the demands of hot groups and those of individuals.

As organizations design themselves more around groups and less around individuals—which is what many are doing

now—can they focus more on the group as a key unit? Can they still leave room for freedom and diversity among the individuals within those groups? Bart Giamatti, former president of Yale University and later the commissioner of baseball, had it right when he wrote, with eloquence and elegance, about the sport he loved so much. He thought of baseball as the quintessential American game because it provides space and opportunity for both the group and the individual.



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Hot groups take pretty good care of their own mental health.

Despite the pressure-cooker conditions under which they work, hot groups generally do a very good job of taking care of themselves. They seem to have their own self-adjusting thermostats for keeping emotional problems under control. Ordinarily, they find ways to level things out and cool things down. Individual members may suffer from one psychological problem or another, but the hot group as a unit is likely to keep itself functioning.

Group members may not be terribly sensitive to the deeper nature of one another's feelings, but they're highly alert to anything that may impair their work, and that includes one another's psychological and physical well-being. When a member is under the weather, battling the flu or simply exhausted, another hot group member steps in to cover the patient's duties.

Individual incentive schemes don't help.

Like performance evaluations, individual incentive schemes usually work poorly. Treating each person's performance as if it were an isolated activity is to deny the interdependence of all facets of the modern organization. Indeed, as groups become more and more central to organizational life, the problems generated by individual incentive plans will get much worse. Like individual performance appraisals, they split group molecules back into their individual atoms, thereby straining the delicate web of cooperation essential to group success.

Individual performance appraisals disrupt the work of hot groups.

If there is any single managerial practice that virtually everybody uses and nobody loves, it is performance appraisal. Those annual evaluation rituals regularly send whole organizations into divisive argument and complaint. In hot groups, performance appraisals can wreak extraordinary havoc.

They introduce a competitive counterforce that tends to split apart the group. It is difficult for a group to act *e pluribus unum* when each *unum* must also try to be *numero uno*.

Appraising the group as a whole offers a partial way out of many of those "normal" problems, but not all. It's much easier, for example, to determine how well a whole project got done than to evaluate, from above, the con-

tribution each member made. Besides, managers at levels above any group seldom know nearly as much as group members themselves about who contributed the most and who goofed off.

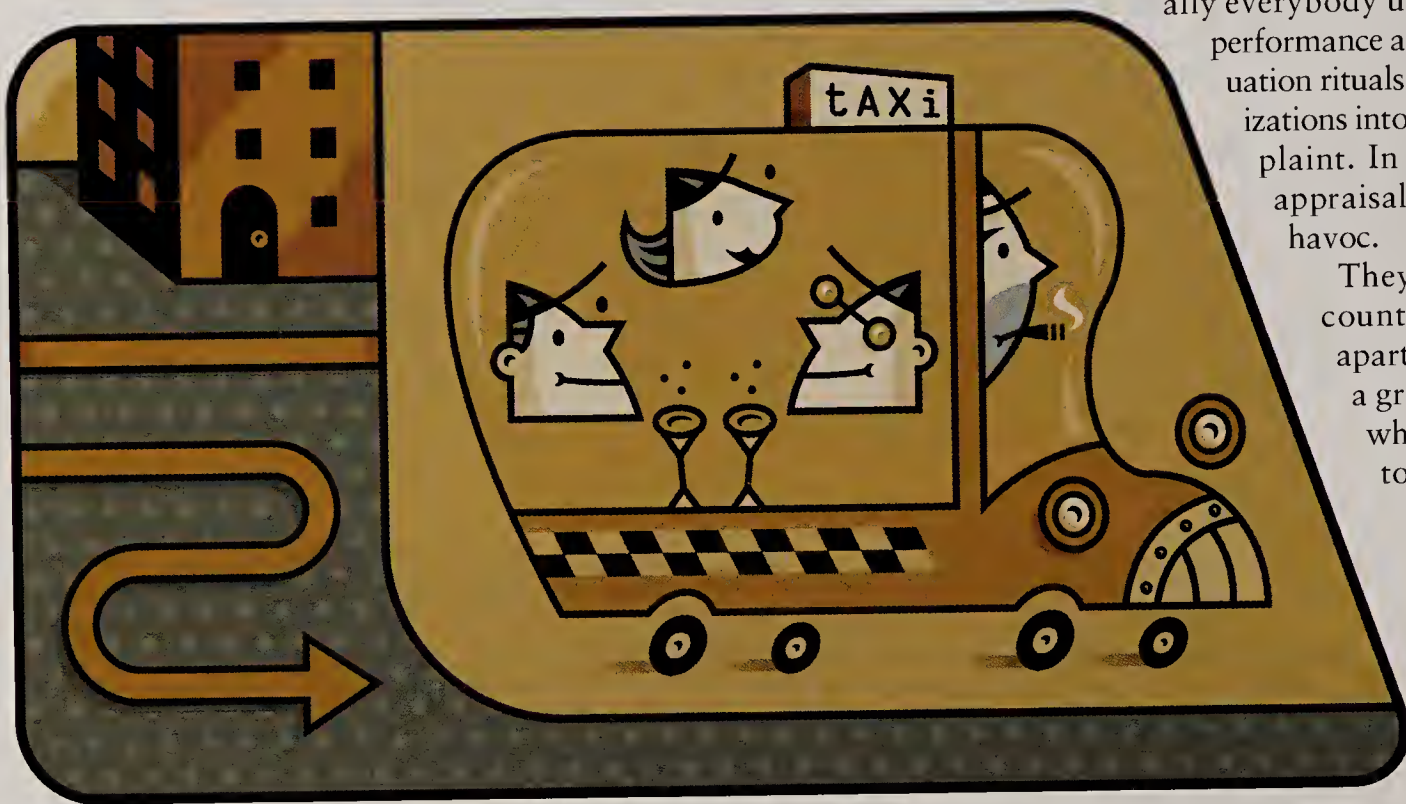
Hot groups create self-defining symbols.

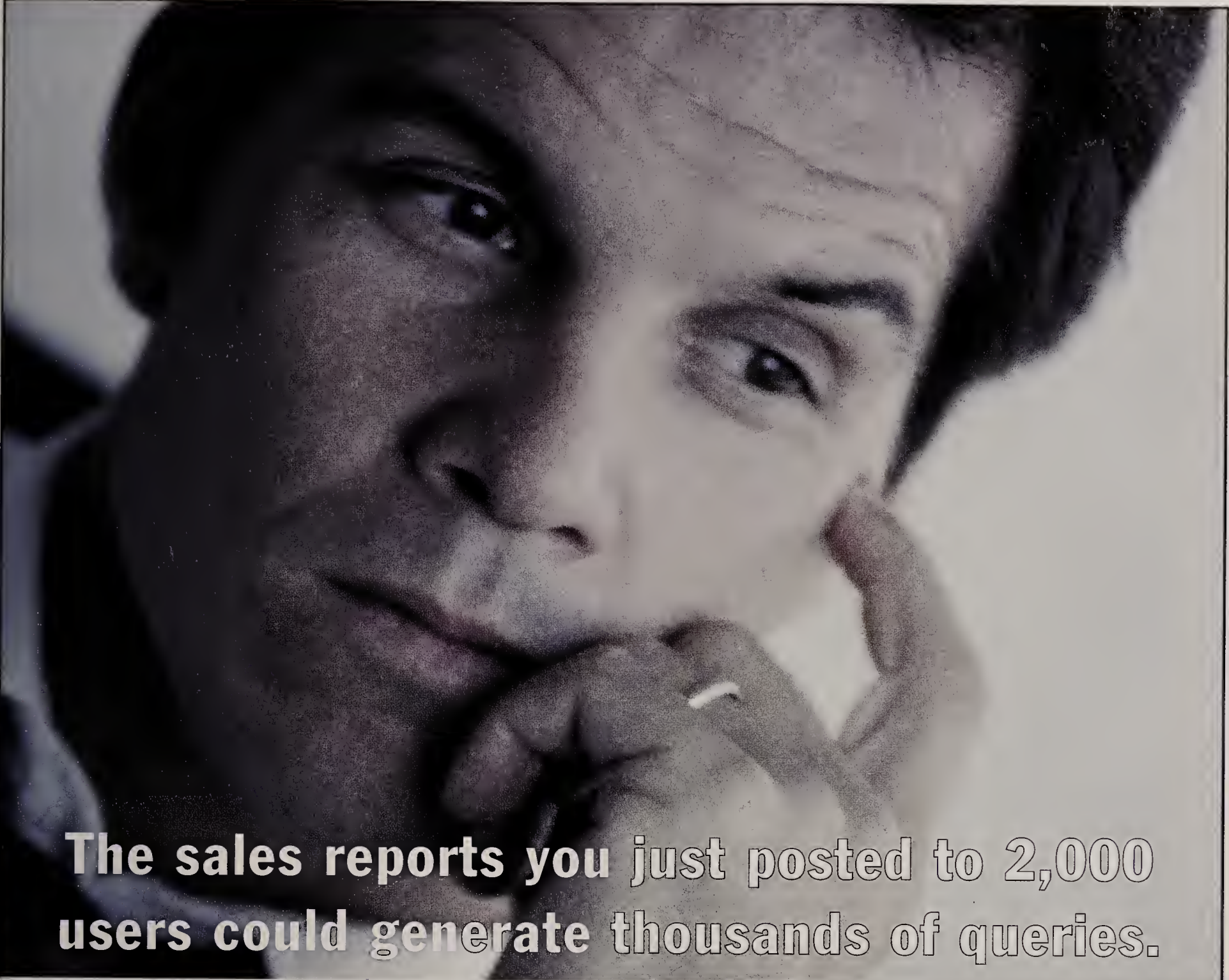
Hot groups often make up unique mottoes, logos, even special words and phrases, that have meaning for just them. They may implement such insignia via the usual flags, T-shirts, hats or more imaginative markers of their identity.

Hot group members work for the group, even when they're away from it.

In "normal" committees, teams and task forces, participants may try hard to avoid extra duties. Not so with members of hot groups. They tend to volunteer for extra work, even to make additional work for themselves. Their motivation is intrinsic.

Even when they're away from the group, members are likely to work long hours on the group's task. They then frequently carry the fruits of their solo efforts back to the group, presenting it as a kind of gift, an intellectual offering. Such special donations are often early indicators that a group is really heating up.





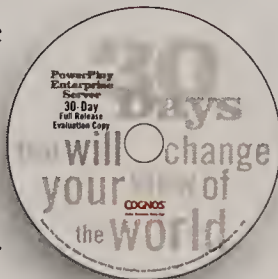
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Many hot groups make real enemies and often create imaginary ones.

It should come as no surprise that hot groups sometimes view themselves as embattled enclaves, their backs to the wall, besieged by barbarian hordes of number crunchers. When the relative isolation of hot groups is added to

everything else, we have ideal conditions for generating that kind of Alamo-like self-portrait.

That's not just paranoia. It's also functional for a group to see itself that way. External enemies increase internal cohesion.

Hot groups can be extremely creative in devising clever ways of evading those real or imagined attacks, ways of circumventing organizational rules and cutting the bureaucratic ties that, they

believe, bind them. They find ingenious ways to out-game "those bean counters" who want to "nickel and dime us to death." In doing so, hot groups often baffle and bewilder their organizations in much the same ways that teenagers baffle and bewilder their parents. Hot groups, some executives complain, do analogous things. They set their own hours. They ignore company rules. They insist on doing things their own way. Besides, those groups aren't even likely to feel any guilt. They don't consider such behavior wrong—quite the reverse. Because they're sure that their cause is just, they can easily defend it by characterizing disliked regulations as bureaucratic boulders blocking the highway to success.

To an unbiased observer, many hot groups' complaints may seem both reasonable and understandable. Long-time veterans of the bureaucratic life too often develop a beaten-down, that's-just-the-way-it-is tolerance for nonsensical regulations. Large organizations might do well, therefore, to take their hot groups' protests seriously. Those lively, task-obsessed groups may be pinpointing just the spots at which a dozing organization needs a loud wake-up call.

Hot groups tend to work obsessively, often secretly.

Hot groups, we repeat, focus obsessively on their task. They think and talk about their work everywhere and all the time. Other prosaic day-to-day functions are likely to be pointedly ignored or

viewed as wasteful distractions. Not surprisingly, hot groups also tend to "forget" weekly progress and expense reports. That unswerving focus on task causes nightmares for administrators who must keep the numbers straight. It can also trigger migraines for colleagues outside the group who need information stored only in the heads of these temporarily inaccessible group members.

Hot groups also have a propensity to be secretive. Love of their task can make them quite possessive and clandestine. They talk a lot but only to those likely to be knowledgeable about their task, and only occasionally do they breach security. In fact, they sometimes become so secretive they won't openly acknowledge exactly what they are doing, even to their own bosses, for fear they will be ordered to stop.

Sometimes their penchant for secrecy and creating enemies may cause a hot group to cross the line.

Self-isolation and secrecy are fraught with danger for both group and organization. When few people outside the group know anything about what a hot group is up to, watch out. Organizations, as we point out again and again, don't take kindly to surprises. So when the hot group finally and proudly unwraps its surprise package for all to admire, all may not admire it. Remember how, early in President Clinton's first term, Hillary Rodham Clinton and Ira Magaziner's group, charged with redesigning the American health-care system, ran aground on those shoals of secrecy? They infuriated many other stakeholders who had been left out of the charmed circle.

When hot groups end, they end.

As a hot group approaches its impending dissolution, its characteristically focused state of mind begins to disintegrate. Task-based feelings of excitement and camaraderie give way to feelings of sadness and loss.

Yet, when a hot group ends after successfully completing its task, the sense of loss is mixed with an enormous sense of accomplishment and pride.



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In Summary

Big, stolid organizations try to live orderly, stable, unemotional lives. Little, agile hot groups live volatile, temporary, impassioned ones. We have tried to spell out some hot group ways of thinking and working. We have highlighted the contrast with the styles that large organizations have long expected and demanded. Yet the fast-changing new organizational world seems to us to require a pragmatic marriage between those two sharply disparate entities. As organizations confront today's frenetic environment, they will need many of the characteristics of hot groups—speed, flexibility, creative thought and innovative action. On the other side, many hot groups will not be able to go it alone. They will require the massive

resources of large organizations to permit them to do their things.

Of course, such marriages will have their problems. Some hot group characteristics, like their tendency to work alone, their impermanence and their inclination to create enemies, carry pluses but also significant minuses for the organization. Nor can we expect large organizations to make perfect sweethearts for hot groups. They will try to overcontrol hot groups. They will want those groups to fill out the proper

forms, dress properly and keep somewhat regular working hours. Moreover, the front office may well view the hot group's brainchild, like the now famous graphical user interface at Xerox, as either outlandishly expensive or idiotic. Yet the synergies that can follow from such a Mutt and Jeff marriage are so enormous, so awesome, that they easily eclipse the difficulties. **CIO**

FYI

For More on New Ideas in Teaming

Check out "A Team Style Guide," Page 22, for the authors' ideas on the symbiosis of various working styles in hot groups.

Check out "Teamwork Made Simple," Page 86, for a roundup of collaboration software.

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Emerging Technology

THE STATE OF THE ART,
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Edited by Howard Baldwin

Teamwork Made Simple

*Project-collaboration software binds together
players despite distance and duties*

BY AMY HELEN JOHNSON

CHRIS SCHAUB USED TO SPEND more time with a clipboard than with a compiler. As a software development manager at Thomson & Thomson, Schaub had the tedious job of updating the project schedule by asking all of the developers how far along they were on their assigned tasks. He was also responsible for distributing the Gantt chart that tracked their progress to all the team members, at the cost of considerable time and toner.

These days, Schaub's job is much simpler. "You want to know where the project is?" he asks. "Log in and look at the collaboration tool."

Since early 1999, Schaub and the 15-person development staff at the trademark and copyright research company in Quincy, Mass., have used Inovie Software Inc.'s TeamCenter as a collaborative project-management tool. Thomson & Thomson is one of a growing number of companies whose development departments have embraced collaboration tools. Although IT departments are early adopters—these software packages are natural extensions of what managers are already doing with a project-management package or paper—most of these project-collaboration tools are general enough to be used by any type of team. The software's key capabilities—

chat, discussion forums and resource-allocation features—overcome the problems that arise when teams consist of people in different physical locations and when workers simultaneously juggle several projects. Once, software tools for programming teams meant a code repository and a bug-tracking database. But as companies find themselves hiring distributed project teams and juggling multiple simultaneous projects, they are turn-

ing to tools that provide the communication and resource-allocation features that traditional programming utilities lack.

According to David Coleman, managing director at San Francisco-based Collaborative Strategies LLC, another factor driving IT departments to use project-collaboration tools is a growing realization within companies that writing software involves more people than programmers and more processes than churning out lines of code. Teams can consist of business analysts, quality-assurance testers and upper-level management, among others. And these expanded teams are not sharing just code, he says; they're sharing questions about code. Issues like determining which projects will have the best rate of return, matching skill sets to project needs, and coordinating the testing and fixing phases of the debugging cycle dominate the discussion.

Rushing to fill the project-team void are collaboration-centric products from new vendors like Inovie, Instinctive Technology Inc. and Netmosphere Inc., as well as project-management solutions with expanded collaboration features from established vendors like ABT Corp., Planview Inc. and Primavera Systems Inc. Even programming-tools vendors such as Rational Software Corp. have joined the party.

It's difficult to make an apples-to-apples comparison

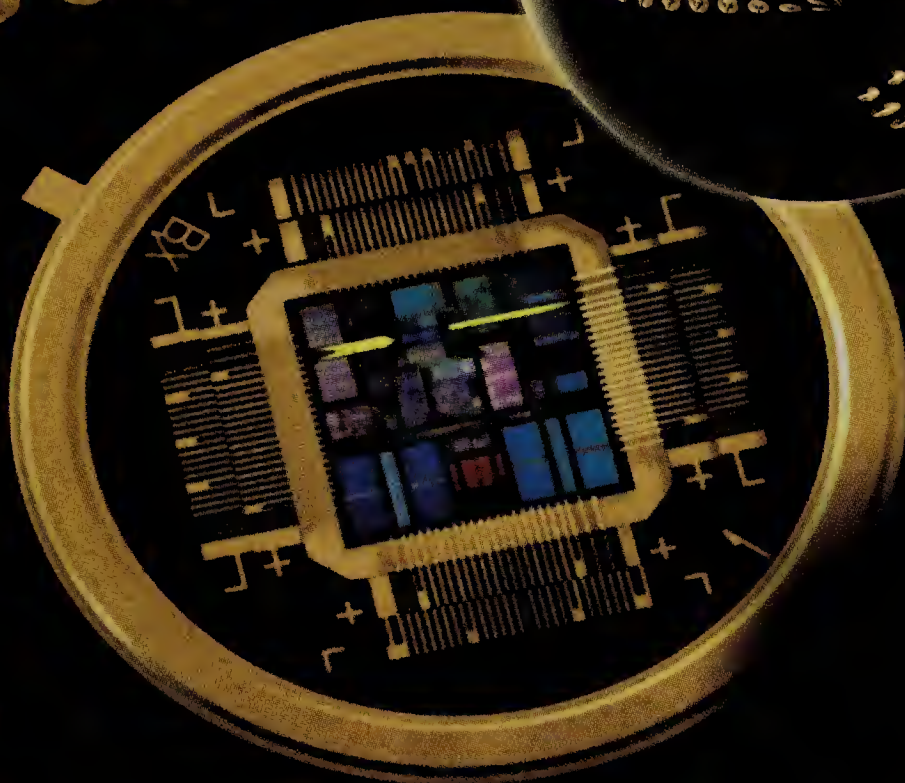


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Emerging Technology

among these products, but all of them rely on the Internet and intranets to provide a foundation for collaboration. People are just starting to realize the benefits of the Web as an interactive medium, suggests Coleman.

Also, these tools let team members access the project documentation and status files appropriate to their job functions. For example, a programmer could see which tasks he was assigned and read the latest bug reports, but he wouldn't be able to look or amend the budget. This is a different workstyle than the one driven by most project-management tools, in which a chart is maintained solely by a project manager.

The other features these tools offer depend on their heritage. For example, a project-management and collaboration tool like TeamCenter tracks multiple projects at a task level, including a Gantt chart view; maintains a shared space for projects where multiple users can access documents such as proposals and specifications; and supplies forums for questions and discussions. It doesn't offer any development-specific capabilities, however, like a bug-tracking module. A pure collaboration product like Instinctive Technology's eRoom features a shared directory for project files and discussion forums, but no integral Gantt charting or software-development tools. Netmosphere splits its project-collaboration framework into two pieces: a shared directory for project files and a scheduling and task module.

None of these products specifically targets IT organizations with software-development tools, such as debuggers. They have chosen to be generalist tools, adaptable to any project, from designing a software application to planning a company retreat. The collaborative tools that descended from project-management suites, like Primavera Systems' TeamPlay, PlanView's PlanView Software and ABT's Results Management Suite, are firmly grounded in traditional project-management methodologies and have additional features for tracking project metrics, allocating resources, and communicating and collaborating among team members.

Other vendors target different vertical

Bitten by the ASP

Will you never buy software again?

IN THIS LATEST INSTALLMENT OF our Capital Ideas column, general partner David A. Lane of Alpine Technology Ventures in Cupertino, Calif., reveals what he finds really cool and what leaves him ice cold.

What's hot? The idea of application service providers (ASP) is causing a lot of furor (see "A New Lease," CIO Section 2, May 1, 1999). By 2001, outsourced enterprise solu-

CAPITAL IDEAS

tions from ASPs will have fundamentally altered today's enterprise software landscape. According to International Data Corp. (a sister company to CIO Communications Inc.), the nascent ASP industry will generate \$2 billion in revenues by 2003. No longer are enterprise software startup companies simply focused on software license revenue models. These new entrepreneurs are focusing on selling application services across the Internet on a pay-per-use basis to corporations.

For CIOs, these new application service offerings aim to eliminate the need for and associated costs of in-house IT staff to purchase, manage, and support hardware and software implementations. ASPs deliver important business solutions like ERP or sales-force automation applications that were historically solved through the deployment of large-scale client/server systems. In the ASP model, the application is completely outsourced by the enterprise to the ASP. As a result, the enterprise solves some of its internal biggest challenges: lack of trained IT professionals, long lead times to deploy new applications and limited budgets for capital expenditures. ASP deployments require little end-user IT support and can often be brought online in a matter

of weeks. Furthermore, corporations expense the service so that it is not a capitalized cost.

Current venture-capital-backed leading ASPs include Corio Inc., On The Go Software Inc. and USinternetworking Inc. Corio and USinternetworking provide ERP solutions while On The Go Software (in which Alpine Technology Ventures has invested) provides a subscription service for travel and entertainment management.

What's not? The winner takes all in the Internet space, so doing a business plan for another Amazon.com is a waste of time. Market leaders typically



have insurmountable advantages over industry followers. In the book and music mar-

ket, Amazon.com's public market valuation was 10 times that of competitor Barnesandnoble.com at press time. Many entrepreneurs have not figured this out. These startups are currently focusing their energies on providing me-too online services that are already offered by successful companies in the areas of auctions, banking and travel.

What's missing? More ASPs. There are not enough startup companies that understand and are focused on exploiting the enterprise ASP opportunities. Many of the current ASP startup companies focus on outsourcing the back-office functions, so ASP solutions that increase the productivity of an enterprise's front-office personnel are one of the next great venture capital investment areas.

—Howard Baldwin



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Emerging Technology

markets. Rational has added collaboration capabilities to parts of its Rational Suite. NexPrise Inc. has customized its ipTeam collaboration product for engineering organizations, especially companies in the aerospace, automotive and high-tech fields. Cubus Corp.'s ReviewIt solution targets architecture, engineering and construction firms. Because the market offers such diverse tools, picking one depends less on the features and capabilities of the products themselves and more on the goals of the individual users.

Geography Gyration

For Allan Tate, program manager at Schneider Automation Inc., a developer of industrial automation systems in North Andover, Mass., geography drove his decision to invest in Rational's products. His company is the result of a merger among various organizations located in France, Germany and the United States. Rational's ClearCase appealed to him for its distributed-teams support, which allows him to tie together the company's remote locations. Rational's integrated set of development-centric modules provides a way to unify the work processes of 150 developers and testers, who come from disparate national and corporate cultures.

Although Tate is banking on measurable ROI from Rational in the form of improved efficiency and higher product quality, he's had to bring in other tools to beef up the suite. Its shortcoming, he points out, is that it is not a complete distributed environment. Not all the modules in the suite have multisite capabilities—ClearQuest doesn't support a replicated database, for example. He was also dissatisfied with the way project archives were distributed, so he integrated Rational with Lotus Notes in order to organize project documentation.

At Priceline.com, the name-your-price e-commerce site, CIO Ron Rose doesn't want to use his project-collaboration system to connect with people across the ocean; he wants to connect with people across the hall. His goal is shortening time-to-market, which means coordinating the work done in the IT department with that in the product-development and marketing departments. He's aiming for one to three months between idea and execution of all projects; his current time-to-market ranges from three to nine months. He's in the process of bringing Primavera's TeamPlay into the Stamford, Conn.-based e-commerce company in order to provide a project-collaboration system for 200 people, including the entire technical department and their colleagues in accounting, business development and upper-level management.

One way Rose thinks he can achieve that three-month goal is by tapping into hard-earned wisdom acquired during previous projects. Rose's IT depart-

LEADING

EDGE

Multimedia Leasing

IT'S EASY TO BE TORN BETWEEN making a big investment in multimedia editing software and wanting to have snazzy graphics available on the Web site. Now there's a compromise. Just as you can now lease or rent ERP and other tools from application service providers (ASPs), you can do the same with multimedia software. Javu Technologies Inc.'s **VideoFarm.com** service allows anyone at a PC to easily edit and manage digital media content over the Internet. VideoFarm.com offers users powerful editing tools as well as a gigabyte of hosting for \$49 to \$89 per month.

Subscribers get unlimited access to the company's JavuNetwork, a cross-media editing and management tool that enables users to combine and edit most types of video, audio and image formats with text and convert them into their finished format. The service includes a proprietary technology that Javu licensed from Cornell University called Resolution Independent Video Language, which enables users to create and edit high-resolution video footage regardless of Internet connection speed. As a result, users can view a low-resolution version of the video on their monitors while actually editing the high-resolution original residing on VideoFarm's servers. For more information, call 212 209-2400 or visit www.javu.com.

Combining CD and DVD

FEEL LIKE THERE'S NEVER ENOUGH space for all the CD and DVD disks a company keeps on hand? Imagine a disk server with plenty of headroom and elbowroom: Procom Technology Inc.'s **DataForce 1000R** is a combination CD/DVD server designed for 24/7 operations with a capacity of 250 disks. A rack-mounted unit, the server incorporates the company's proprietary technology for speeding up access; the company claims access speeds approach that of hard drives. The server can connect directly to network cabling and provide access to client workstations without TSRs or proprietary software, which allows users to take advantage of the native networking ability of their operating systems (the server works with either TCP/IP or Novell's IPX protocols). The goal is to integrate the server into a variety of networking environments, whether desktops are running Windows for Workgroups, 95, 98, NT or OS/2.

Procom boosts the speed of the disks by incorporating 160GB of hard-drive capacity using RAID technology. The server also incorporates redundancy with hot-swappable power supplies, fans and drives. The company estimates an average selling price of \$18,894. For more information, call 949 852-1000 or visit www.procom.com.



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Emerging Technology

ment modifies the software on the Priceline.com Web site as frequently as 150 times a month. By using TeamPlay to manage those changes, he can capture information to improve future projects: information like what tasks are required to build a new product, accurate estimates of time to complete tasks, and where the pitfalls are. In addition, Rose hopes TeamPlay will help him manage dozens of simultaneous projects by enabling him to maximize his people resources and determine which projects give the biggest bang for the buck.

Ron Shevlin, a senior analyst at Forrester Research Inc. in Cambridge, Mass., says that CIOs like Rose are on the right track. "There's a need to manage across projects, not just individual projects," he says. One project has an impact on all the others, he explains, so he favors tools that start with collaboration first.

The Right Mix

Although none of these tools is the perfect blend of features, IT managers are finding that they are mature enough to become an essential part of their development toolkits. For the most part, Christopher Anderson, a principal with custom software development house Eques Technology Corp. in Wellesley, Mass., hasn't had problems integrating Instinctive's eRoom into his best-of-breed set of project management, development and collaboration tools. The company has moved to a Hollywood model of development teams—that is, bringing in specialists as needed to fulfill a particular contract. eRoom enables Anderson to collaborate with people working in places like the Ukraine and India. It also works well with the Microsoft Project and Word applications Eques already relied on; Anderson can launch those applications from eRoom. That ability was important because Anderson didn't want to reinvent the wheel. "We wanted to use the tools we were already using, just use them more efficiently," he says.

Anderson chose eRoom because collaboration was the missing piece in his best-of-breed approach. He was relying on the telephone and e-mail; not only was this expensive and cumbersome, but he risked corrupting or losing large files that were sent through e-mail. Making sure everyone had the most recent version was a headache as well. With eRoom's central repository, everyone stays current, communications costs have decreased (in two months he saved enough on phone bills to pay for eRoom) and productivity is up. "If I were to take it away, I don't know how we'd operate," he says. **CIO**

Amy Helen Johnson covers technology and business from the Silicon Forest in Washington state. You can reach her at amyhelen@pobox.com.

LEADING

EDGE

Web Monitoring

E-COMMERCE RUNS 24 HOURS A DAY, BUT PEOPLE don't want to enter the office in the morning and find the Web site has gone down during the night. Statusphere LLC's **Netwhistle.com** monitors your Web page 24 hours a day. If the site experiences any type of problem, the product sends a designated technician an e-mail with detailed error information to help troubleshooting begin immediately. NetWhistle uses "pings" and other application- or protocol-specific methods to check responsiveness. It also confirms customer responsiveness via your Internet connection so that you know whether your Web site is dealing with requests properly.

With the IP addresses of Netwhistle.com's monitoring servers, you can configure company firewalls and routers to allow monitoring to take place without leaving them exposed to the security risks of the Internet.

The initial download of Netwhistle.com for hourly monitoring is free, but an upgraded option monitors the site anywhere from every 15 to every 5 minutes and can verify text strings in the downloaded page. The cost for this service is \$9.95 per month per URL. For more information, call 703 405-1473 or visit netwhistle.com.

E-Commerce for Manufacturers

ELECTRONIC SOLUTIONS ARE SEEPING into every facet of Web commerce, especially where relationships are already established. HotSamba's **HotSamba Net** targets electronic commerce for durable goods manufacturers, wholesalers and distributors. Its Net Procurement module Web-enables the acquisition and management of nonproduction goods and services on the buying side. Its Net Marketsource module enables selling and trading between businesses over the Internet for standard MRO (maintenance, repair and operations) supplies.

HotSamba Net is designed to support millions of catalog parts, with multiple searching and complex viewing capabilities, as well as to organize and control suppliers that may have overlapping product lines and vastly different business processes. The goal of Net Procurement (an update of a currently available product called NetSource) is to reduce operating costs and improve service and current distribution channels. Net Marketsource is designed to help companies differentiate themselves from competitors and more quickly deliver products, as well as to better anticipate customers' future requirements. With up-to-date electronic catalogs and less paper-intensive ordering, companies can take advantage of immediate ordering and shortened shipping times.

The products are designed to integrate with existing systems, such as ERP and EDI. In addition, Net Procurement provides secure access via ID and password identity based on purchasing-established user profiling. Net Marketsource offers open catalog browsing and secure online ordering for registered customers with valid IDs and passwords. Running on HP-UX, Linux, Solaris and Windows NT, pricing starts at \$300,000 for Net Procurement and \$175,000 for Net Marketsource. For more information, call 847 342-8200 or visit www.hotsamba.com.



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Partner: SSA

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Solution: e-commerce Extranet

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- 5** Orders can now be processed on a single online form instead of several more complicated paper forms.

In a competitive marketplace, customers are able to place high demands on manufacturers. It's no surprise to hear consumers insist on excellent service, competitive prices and quicker shipment. Mother Parker's Tea and Coffee is using e-business to help answer these demands and stay ahead of its competitors.

Mother Parker's, Canada's largest supplier of private brand coffee, has a history of using technology to gain competitive advantage. The company approached System Software Associates (SSA), Ironside Technologies and IBM to build an e-commerce extranet. The site gives customers better access to Mother Parker's full line of products, as well as faster ordering and shipment.

SSA has been an IBM Business Partner for over 15 years, delivering solutions to 6,500 customers in 90 countries. SSA works exclusively in the manufacturing industry, creating integrated supply chain solutions using e-business and enterprise software.

"Our customers have really responded to the quick, easy ordering," says Harry Hastilow, director of information technology for Mother Parker's Tea and Coffee. To find out more, call 1 800 IBM 7080, ext. BP06, or download a complimentary online consultant report* at www.ibm.com/e-business/ssa

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Expert Advice

LESSONS LEARNED FROM PEOPLE IN THE KNOW

Career Counsel

CIOs and aspiring IT managers seek guidance from Korn/Ferry executive recruiter Mark Polansky

Looking for executive IT career advice? The following are excerpts from our ongoing online column, Executive Career Counselor, in which resident expert Mark Polansky answers your questions about senior-level career advancement, change, education, strategy and more. Polansky is a managing director and member of the advanced technology practice in the New York City office of Korn/Ferry International, one of the world's leading executive search firms. Visit our Web site at www.cio.com/forums/executive/counselor.html to read more questions and answers or for advice on your own career plans.

—The Editors

Dear Mark:

I have 28 years in the IT field serving in a variety of GM/director-level positions in software development, MIS and consultative sales. In addition, I have two years' experience in sales and marketing, and more recently I have moved into product marketing for a software development company.

I feel that my diversified IT experience, excellent and current technology expertise and solid business background—I started a phone company in the early '80s to compete with AT&T and took it public two years later—are the ideal qualifications for a CIO. However, in my career search over the past year, I've had no success in getting a job interview.

What are your thoughts on the ideal background for a CIO? What can I do to position myself better? My current salary is \$120,000 with stock and bonus.

Dear Diversified Exec:

You certainly seem to have a broad and varied background in technology. Nonetheless, software development, MIS, consultative sales and

product marketing are very different career experiences with very different skill sets. Additionally, your experience starting a phone company will not map very well to the competency requirements of the typical corporate CIO.

Instead, stress your experience in applying technology to meet the strategic and tactical needs of the corporate enterprises where you have worked as well as at your client organizations. Alternatively, the brief description of your background sounds ideal for a chief operating officer role in an entrepreneurial technology venture or perhaps in a consulting company.

Dear Mark:

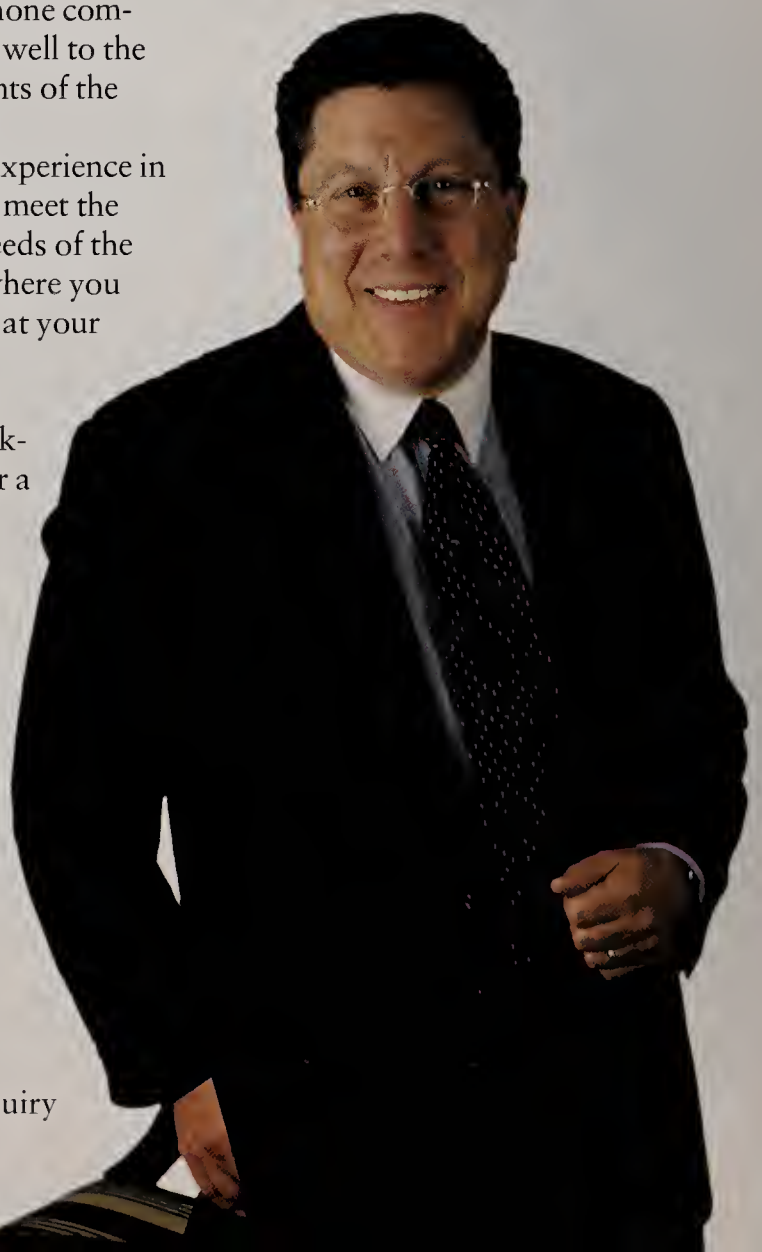
In order to acquire a management position in the IT area, would you need to come up with a special resume?

Dear Resume Writer:

I assume from your inquiry

that either you are not yet in the ranks of IT management but are looking to move up the food chain, or you are now an IT manager writing a management resume for the first time. In either case, there are two major considerations for crafting an appropriate management-oriented *curriculum vitae*.

First, your document needs to reflect your view of the world at 10,000 or 20,000 feet rather than at sea level. Be sure to stress the top- and bottom-line impact resulting from your group's or department's projects and your collaborative efforts with your user community to leverage technology for the good of the business function. Second, I strongly suggest that you emphasize your skills and accomplishments in the areas of planning, leadership, staff development, creative thinking



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and problem solving that make you a good manager of people, projects and resources. Technology, specifically the alphabet-laden jargon of technology, should be addressed in this context only.

Dear Mark:

I am a CIO for a small retail chain with \$120 million in sales. I currently have an employment contract that stipulates conditions for termination and severance. How common is that for CIOs and what is the best way to approach the subject with potential employers?

Dear Retail CIO:

Estimates of the number of CIOs who have contracts versus those who don't vary widely, but most CIOs don't. Contracts are more common in larger companies and in highly competitive industries. CIOs without contracts are sometimes offered contracts as a reward for a job well done and as a retention tool. While a contract brings with it certain security and protection, there may be a price to pay in terms of being locked in should that perfect opportunity or midlife crisis come along, and there frequently is a non-compete provision in return for the perks and predictability of a contract. As they say, be careful what you wish for.

Dear Mark:

I am an IT professional with almost 30 years' experience in higher education. By May 2000, I will have earned my doctorate degree. I have been a faculty member, an academic department head and a dean in addition to my role as an IT/MIS director. I have worked for four colleges in my career as well as one year as a project manager for a higher education technology vendor. I have heavy systems, programming and IT management experience as well as strong managerial skills.

Since 1998, I have been the executive director for IT at a midsize college, and I report to the president of the college.

Although I am a member of the President's Cabinet with four vice pres-

idents, I have not been able to convince him to give me the VP title. I have been told that I can use the title executive director for IT/CIO. Should I continue to pursue the VP title? Should I drop the executive director portion of the title and use only CIO? Do I have a chance for a higher-level position outside of academia?

Dear Academic CIO:

Today the head of information technology at large academic institutions usually reports to the provost and has the title of associate provost. As you did not mention a provost in your letter, is one of the four vice presidents also the provost? Either way, you are reporting to the highest possible level, you have a seat at the leadership roundtable with four VPs, and you have the very acceptable title of executive director for IT/CIO. I wouldn't quibble for the VP title since it's the other stuff (like the President's Cabinet) that matters more. And I wouldn't give up any part of the compound title. As far as moving into industry goes, it doesn't sound like that's who you are, but I would want to know more about you and your aspirations in order to comment further.

Dear Mark:

With nine years of IT experience that includes programming, network administration and project management, I have spent the last three years based in the Midwest, traveling internationally to support the member companies of my employer, a large insurance company. Because I enjoy the challenges of working in other countries, I sought to further my international management skills so that I could assume greater worldwide responsibilities, be of more value to this organization and eventually be considered for a CIO position.

I presented my employer with the idea of an alternate workweek while attending an executive master's of international management program. Part of the tuition would be covered by the company's standard tuition reimbursement program, and I asked the company to fund the remaining

tuition in exchange for a commitment to work a certain number of years. I even offered to sign a promissory note to cover the expense in the event I departed before my commitment of time was up.

In short, the company said no. I was told I was valued in the position that I was in and there were no opportunities to move from a technical role into a management role (even though my job included setting the IT direction and managing a team of IT resources in each of six member companies, albeit small companies of 50 to 100 employees).

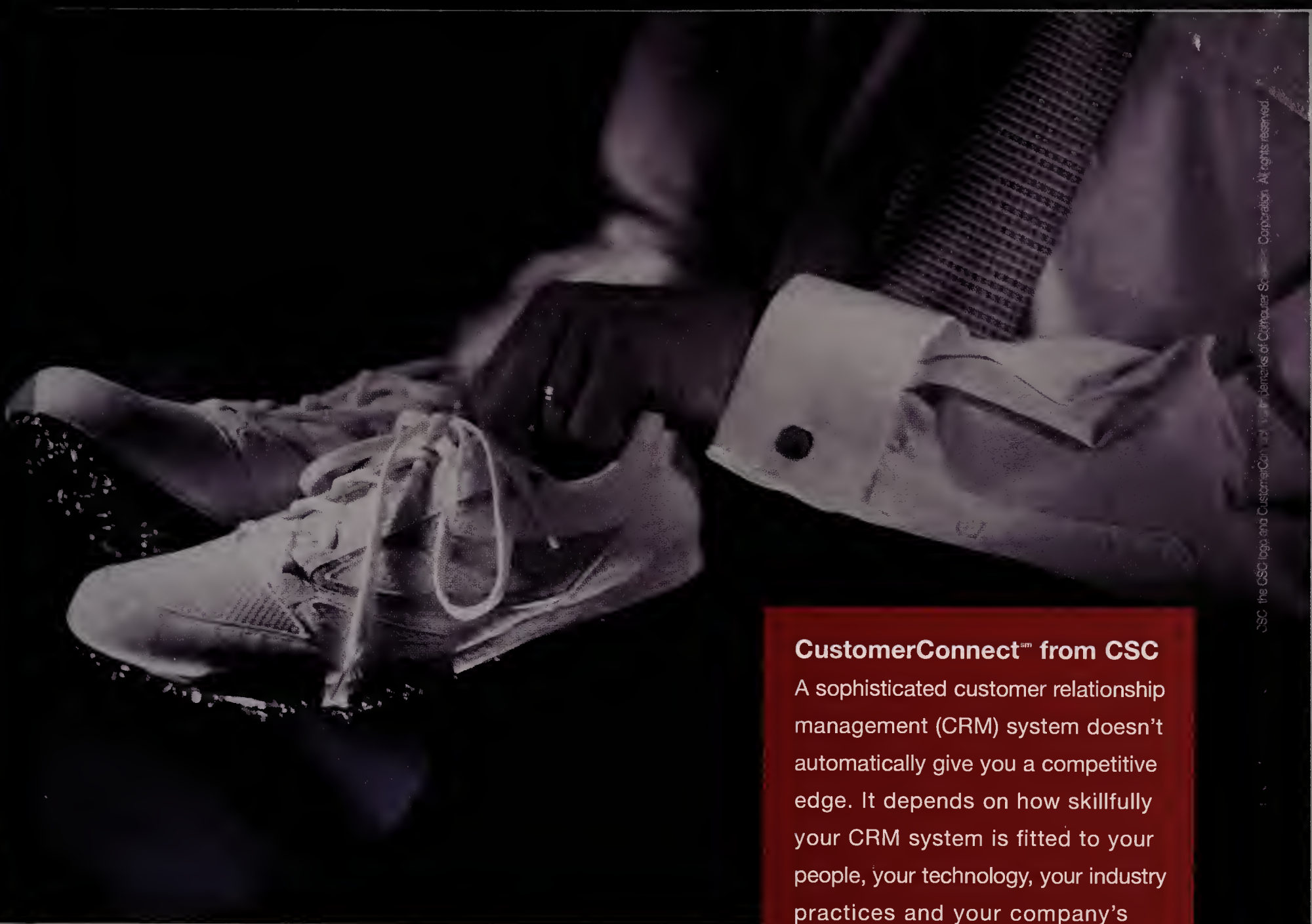
Was I out of line to ask for such an opportunity? I've since left the company in hopes of finding an organization that would support such an endeavor and provide the international challenge I seek. Do such organizations exist?

Dear World Traveler:

I think the idea of furthering your education and orienting your skills and experience internationally is an excellent one. Given the globalization of both traditional and e-business today, there are many U.S. companies that will greatly appreciate what you bring them in project management skills and international experience, plus your strong desire to remain international in scope and do the travel that comes with it.

I suspect the problem was that the alternate workweek scenario meant your employer would lose half of your time; I expect this will be an even bigger problem for a brand-new employer that doesn't know you. Your choices then would be to put off work for a while and do the education program full time, or shift to a more weekend-oriented executive MBA program, which usually requires alternate Fridays and a week or two during the year. Then seek out those top Fortune 500 companies that have significant overseas operations, business units and revenue, and go for it! **CIO**

The Web-based Executive Career Counselor column is edited by Web Research Editor Kathleen Kotwica. She can be reached at kkotwica@cio.com.



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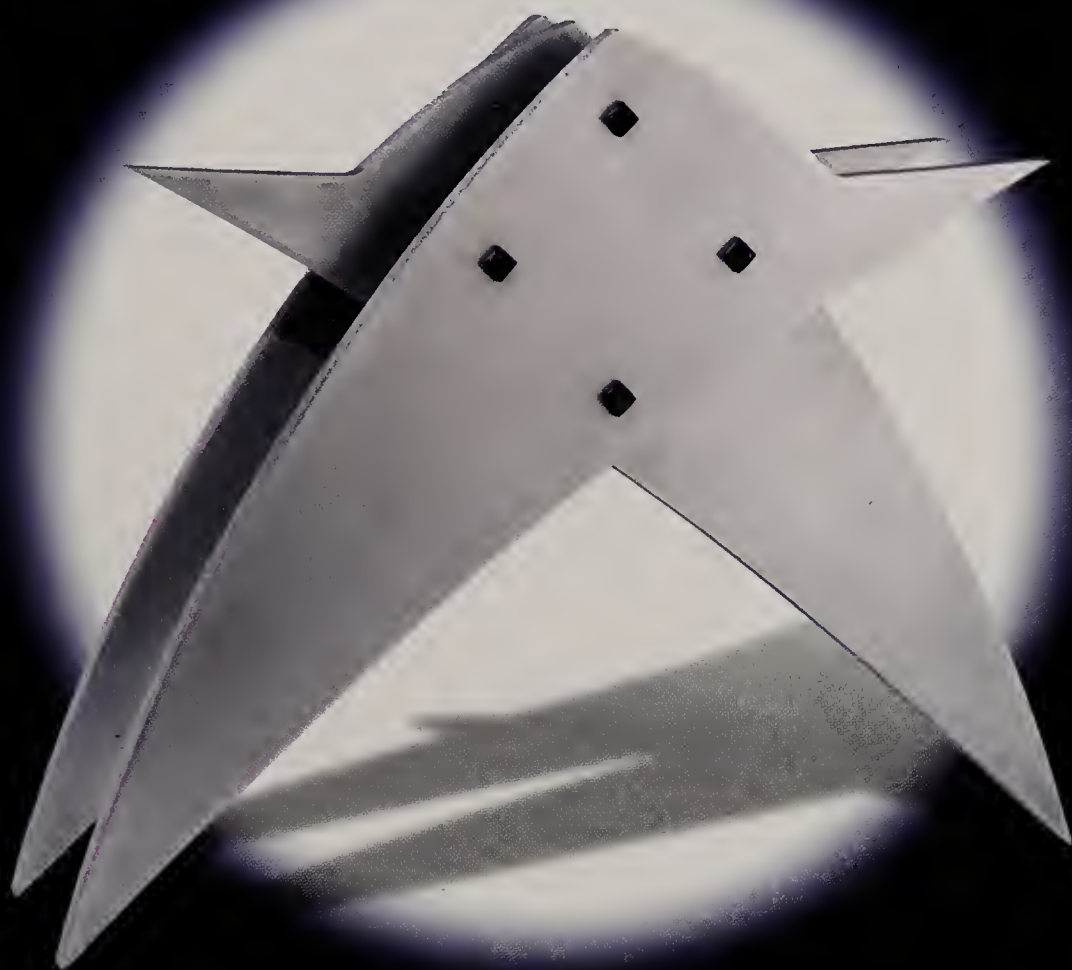
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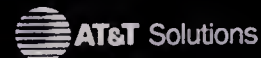
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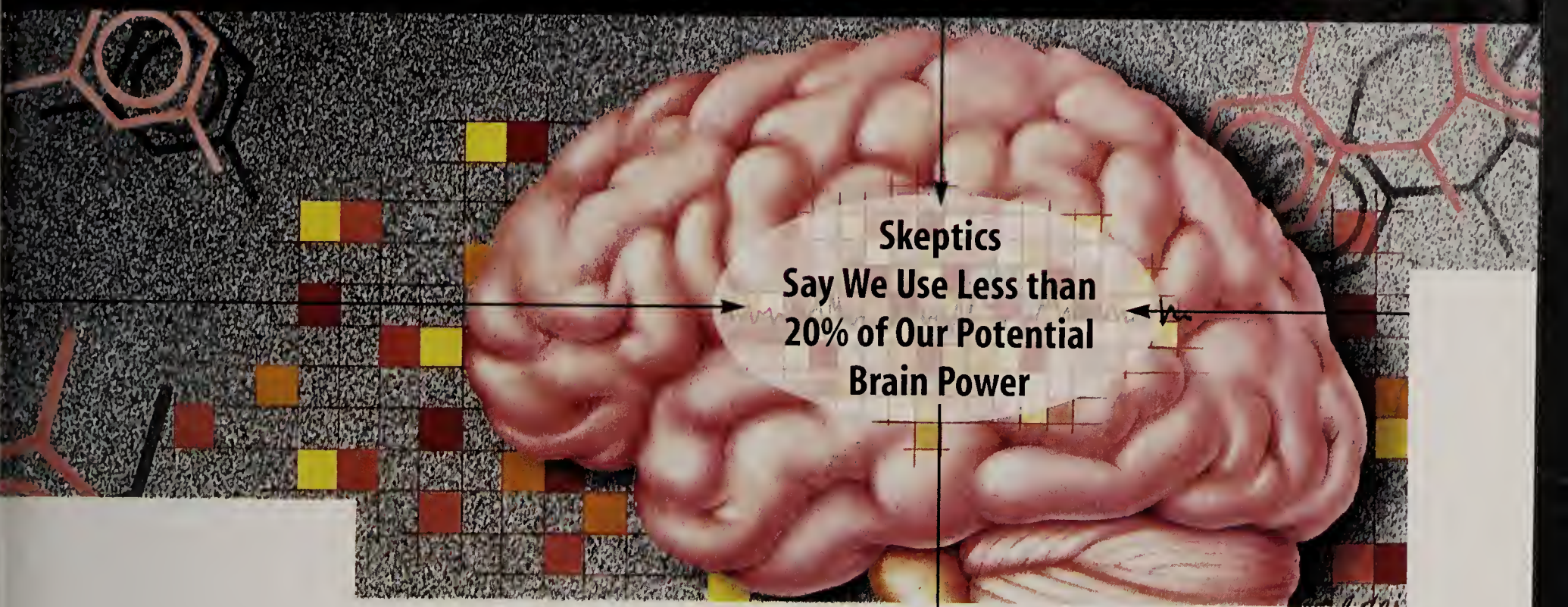
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C. Total paid and/or requested circulation	129,288	129,521
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Working Smart

MAXIMIZING THE PAYOFF FROM I.T.

WHEN THE ALASKA DEPARTMENT of Fish and Game looked at how it was handling its reports during the salmon fishing season, it felt as if it were swimming upstream. Downtime doesn't exist during the two-month season, when the Juneau-based department must monitor the run of thousands of salmon throughout the state.

The agency is responsible for disseminating daily information about salmon catches to fisheries worldwide. Companies that process the fish use the data to gauge how many people they need to hire and how many storage barrels to buy. The amount of fish caught in Alaska affects the market for salmon farmers in Chile, who use the reports to forecast demand in the United States. In addition, several U.S. processing plants are owned by Japanese companies that need to be able to access the information directly from headquarters.

In the past, department employees gathered information from several districts, typed the data into spreadsheets and faxed them to a webmaster who manually updated the department's home page—a laborious task that took all day. Updates happened via e-mail; because changes or mistakes sometimes went unaccounted for, decisions such as how many fish to keep and how many to release to spawn were occasionally based on outdated data.

After a head biologist resigned at the fishery in Bristol Bay, which includes biologists, entry clerks and fishery managers, the department realized it needed to formalize its data collection and retrieval system. According to Carmine DiCostanzo, chief of computer services

Alaska Department of Fish and Game's Web Database Access Application

created a client/server application as a front end for data entry. Now once the data is entered, it resides in a single Oracle database in Juneau and is immediately available to employees around the state. InfoSpinner provides the middleware that hooks into the database and consolidates the information, preparing it for online consumption.

When fisheries decide the data is ready to be published online, the ForeSite application spits it out onto Bristol Bay's home page. The middleman is no longer necessary. Data entry clerks, biologists and fishery managers can post, access and update

data in real-time—no more e-mailing updates and hoping they make it to the right people. And fishery managers as far away as Japan can immediately view the data on the Web, saving time critical to business decisions.

In addition to improving the access and accuracy of the data, the application has allowed the department to add new reports and new functionality. Graphs showing historic information such as how many fish were caught and how many were set free in each district on a given day during last year's season are posted alongside current information—an at-a-glance method of comparison that was never possible before.

And the benefits don't end in Bristol Bay. Other commercial fishing areas are eyeing Bristol Bay's system in hopes of emulating it; Alaska's Cook Inlet will be the next region to go online. Probably the only thing that could get the information out to the rest of the world quicker would be if biologists installed computer chips in the salmon as they swam by. **CIO**

Copy Editor Kathleen S. Carr can be reached at kcarr@cio.com.

Vital Statistics:

- **Organization:** Alaska Department of Fish and Game, Commercial Fisheries Division
- **Application:** Web database access application
- **Technologies:** Centura SQL Windows client/server application hooked into an Oracle relational database; InfoSpinner Inc.'s ForeSite Application Server as the middleware
- **Scope:** Twenty people at the department, including data entry clerks, fishery managers and biologists
- **Sponsor:** Carmine DiCostanzo, chief of computer services in the computer services department, Alaska Department of Fish and Game
- **Objective:** To provide more accurate data faster to people around the state and beyond
- **Payoff:** Saves time and increases accuracy in disseminating fishery reports around the world, allowing for quicker access to information

for the division of commercial fisheries, "When people come in to replace someone, they don't have the institutional knowledge that the original person had and a lot is lost." Demand for a better way of doing things also grew as a result of employee turnover—new people came in who had used more efficient tools in other places.

In September 1996, the department implemented ForeSite Application Server from InfoSpinner Inc., an application server technology company in Richardson, Texas. First the department

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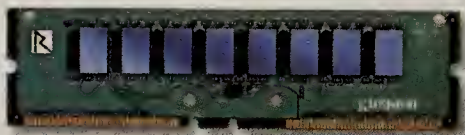
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